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No interest in being cynical: Conflicting versus corresponding interests track variability in the link between personal control and cynicism

Bryan Kwok Cheng CHOY
Singapore Management University, bryan.choy.2020@phdps.smu.edu.sg

NO INTEREST IN BEING CYNICAL: CONFLICTING VERSUS CORRESPONDING INTERESTS TRACK VARIABILITY IN THE LINK BETWEEN PERSONAL CONTROL AND CYNICISM

BRYAN K. C. CHOY

SINGAPORE MANAGEMENT UNIVERSITY
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Bryan K. C. Choy

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Dissertation committee:

Norman P. Li (supervisor/committee chair)
Professor of Psychology
Singapore Management University

Kenneth Tan Yu-Yang
Assistant Professor of Psychology
Singapore Management University

Kimin Eom
Assistant Professor of Psychology
Singapore Management University

Mark van Vugt
Professor in Psychology
Vrije Universiteit Amsterdam

Singapore Management University
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I hereby declare that this PhD dissertation is my original work
and it has been written by me in its entirety.
I have duly acknowledged all the sources of information
which have been used in this dissertation.

This PhD dissertation has also not been submitted for any degree
in any university previously.

Bryan K. C. Choy
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Abstract

Recent literature indicates that a lack of personal control negatively predicts (social) cynicism, a negative view of others as self-interested and exploitative (Stavrova & Ehlebracht, 2018a, 2019). Despite the ostensibly robust nature of this relationship, I propose that the strength of the link between personal control and cynicism could be more variable than extant findings have suggested. In particular, I argue that variability in the control-cynicism link may be tracked (i.e., moderated) by the extent to which actors in a situation have corresponding or conflicting interests, with the effect of control on cynicism being attenuated when actors are perceived to have corresponding (vs. conflicting) interests. Furthermore, I reason that perceptions of vulnerability to exploitation should mediate the effect of control (and interests) on cynicism. Overall, the present research hypothesized a moderated mediation model linking personal control, interests, vulnerability, and cynicism. Four studies were conducted: three experiments that employed economic games (Study 1) and vignettes (Study 2 and 3), and one large-scale, cross-cultural correlational study (Study 4). Findings were broadly consistent with the theoretical model: the link between control and cynicism was mediated by perceptions of vulnerability and was attenuated in situations with corresponding (vs. conflicting) interests. The implications and limitations of the current research are discussed. Overall, the findings suggest that shaping people's perceptions of interests in a situation can be one useful way to help stem the cynicism that arises from a lack of personal control.

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Acknowledgments

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Dedication

To Lee Xin, for helping me to be a better version of myself every day.

To WK and LY, for all your parental investment.

No interest in being cynical: conflicting versus corresponding interests track variability in the link between personal control and cynicism

Introduction

"It is a basic truth of the human condition, that everybody lies. The only variable is about what."

"If you wanted fair, you chose the wrong job, the wrong profession, the wrong species"

— Dr. Gregory House

For almost a decade, English actor Hugh Laurie starred in the medical drama *House M.D.* as Dr. Gregory House. As illustrated by the quotes above, Dr. House was a model cynic who held a dim view of the world. He had an unshakeable faith in the self-interest, malevolence, and incorrigibility of humankind and was, consequently, highly—even proudly—distrusting of others. Many viewers of the show believed that Dr. House's cynicism stemmed from an inability to bring under control various personal troubles like a spiraling drug addiction or a lack of genuine personal relationships. In line with the wisdom of television crowds, recent scholarship has demonstrated a robust (and negative) relationship between a sense of control and cynicism (Stavrova & Ehlebracht, 2018a, 2019). In part, perceptions of vulnerability to exploitation are theorized to mediate this link; that is, a low sense of control (Lachman & Weaver, 1998) engenders a sense of vulnerability to exploitation that, in turn, fosters cynical beliefs (Stavrova & Ehlebracht, 2018a, 2019).

However compelling, this link between control and cynicism may be more variable than the current literature (or television shows) suggests.

Although extant theorizing assumes that a lack of control invariably leads to perceptions of vulnerability to exploitation, this assumption may not always hold true. According to evolutionary perspectives, overcoming many of the survival and reproductive threats that our ancestors faced—like warfare, food sharing, pathogenic diseases—required cooperating with others to achieve a collective interest. Such cooperative alliances were inherently characterized by a state of interdependence, where one's outcomes depend on the actions of others. In other words, they entailed a lack of control. Critically, in such situations where interdependent individuals desire similar outcomes, opportunities for—and one's vulnerability to—exploitation may be limited. Accordingly, even as individuals experience a low level of control in such situations, the sense of vulnerability to exploitation (and, consequently, cynicism) that arises may not be as strong. More broadly, such reasoning suggests a contextual factor that modulates the control-cynicism link: whether one lacks control in situations where others display corresponding (i.e., shared or similar) or conflicting interests.

Across four studies, I examined the role of interests in moderating the effect of control on cynicism. I propose that variability in the control-cynicism link may be tracked by the extent to which actors in the same situation are interested in achieving the same outcomes (i.e., whether they have corresponding [vs. conflicting] interests). In situations where actors have seemingly corresponding (vs. conflicting) interests, control may more weakly predict perceptions of vulnerability to exploitation and, consequently, cynicism.

Cynicism, personal control, and vulnerability

At base, cynicism reflects a belief about the malevolence of one's social environment. Cynics view others as inherently self-interested, exploitative, morally bankrupt, and incorrigible and, accordingly, view themselves as inhabiting a harsh, dog-eat-dog world filled with danger (Leung et al., 2002; Neumann & Zaki, 2022; Stavrova & Ehlebracht, 2016, 2018a, 2018b). Consequently, cynics tend to err (almost unwaveringly) on the side of caution and are by default deeply suspicious about the intentions and sincerity of others—even to their own detriment (Choy et al., 2021; Dinca & Iliescu, 2009; Kaplan et al., 2004; Leung et al., 2002). Cynicism is related to, though conceptually distinct from other constructs like trust and skepticism [1].

Recent scholarship indicates that cynicism stems, in part, from a lack of control (Stavrova & Ehlebracht, 2018a, 2019). A sense of personal control refers to one's self-perceived capacity for influencing events to achieve valued outcomes (Abeles, 1991; Burger, 1989) and can be further decomposed into two facets: personal mastery and perceived constraints. Whereas personal

[1] At the dissertation proposal, MVV asked about the role of trust in the current theoretical model and its relation to cynicism. This question makes sense as vulnerability to exploitation and cynicism seem highly related to trust; however, there are some important distinctions. While some definitions of trust necessitate an acceptance of vulnerability (Evans & Krueger, 2009), this extends beyond perceiving vulnerability to also *accepting* it. Trust is also different from cynicism. While there can be different dimensions of trust (e.g., trust in someone's competence, benevolence, integrity; Mayer et al., 1995), cynicism has a narrower focus (i.e., on human nature). Furthermore, trust is mainly cognitive, while cynicism can manifest behaviorally and affectively (Andersson & Bateman, 1997; Dean et al., 1998). Their differences have been borne out in published data (Singelis et al., 2003) and a pilot survey I conducted with 147 SMU undergraduates (M_{age} = 20.80, 32 males, 111 females, 3 did not say), where both variables correlated at r = .33 (p < .001). Cynicism was measured with a 5-item cynical distrust scale (Greenglass & Julkenen, 1989) while trust was measured with Yamagishi and Yamagishi's (1994) generalized trust scale. Overall, while trust is highly relevant to discussions of cynicism, including a relevant trust-related variable in the theoretical model may be beyond the scope of the current investigation.

MVV also asked about the difference between cynicism and skepticism. Skepticism refers to an attitude of doubt in general or towards a particular object and, thus, is conceptually broader than cynicism, which deals with general perceptions of human nature. More than cynicism, skepticism has been discussed as a beneficial way of viewing of the world (especially in combatting conspiratorial beliefs; Ståhl & van Prooijen, 2018). Their differences are borne out empirically: skepticism negatively predicts belief in conspiracies, while cynicism positively predicts it (Bensley et al., 2022).

mastery reflects a perception of one's own efficacy in goal pursuit, perceived constraints reflect a sense that factors beyond one's control influence life outcomes (Lachman & Weaver, 1998). In particular, longitudinal evidence highlights the key role of perceived constraints in promoting cynicism (Stavrova & Ehlebracht 2018a, 2019). Indeed, I replicated this association in a recent pilot study: perceived constraints correlated with cynicism at $r = .28$ ($p < .001$), though an overall perception of control (comprising both perceived mastery and constraints) also correlated with cynicism, $r = -.24$ ($p = .004$) [2].

In particular, one's perceptions of vulnerability to exploitation may be a key mechanism through which a lack of control leads to cynicism (Stavrova & Ehlebracht, 2018a, 2019). From this perspective, a perceived lack of control can lead people to view themselves as being at the mercy of others and, thus, vulnerable to exploitation. In turn, viewing the self as vulnerable to exploitation can induce a cynical worldview by focusing individuals on others' capacity for exploitation, essentially coloring one's view of everyone else as self-interested and exploitative (Stavrova & Ehlebracht, 2018a, 2019). To illustrate this reasoning, consider a low-level employee in a large company, who perceives his pursuit of success as being completely influenced by factors beyond his control, such as company policies, office politics, or managerial decisions. Consequently, he might perceive himself to be at the mercy (and vulnerable to the exploitation) of others. Such vulnerability might narrow his focus and vigilance towards the capacity of these others for being self-interested and exploitative (vs. their capacities for being benevolent), shaping

[2] Cynicism was measured with the 5-item cynical distrust scale (Greenglass & Julkenen, 1989). Control (comprising its two dimensions) was measured with Lachman and Weaver's (1998) 12-item measure.

a cynical view of his environment as comprising *mostly* of unfair policies, exploitative and conniving coworkers, and self-interested superiors.

Variability in the control-cynicism link: the role of interests

While seemingly robust, the link between personal control and cynicism may be more variable than the current findings indicate. Underlying extant theorizing on the control-cynicism link is a critical assumption: individuals who perceive themselves to have low levels of control will invariably experience a sense of vulnerability to exploitation. I propose that this assumption may not always hold true and thus, the control-cynicism link may weaken.

First, much research has focused on the impact of (a lack of) control under negative circumstances, typically showing that, in situations of threat or uncertainty, a low (vs. high) control leads to negative outcomes (e.g., aggression, discrimination; Averill, 1973; Friesen et al., 2014; Pervin, 1963; Warburton et al., 2006). Yet, people can and do experience low control in more positive circumstances (e.g., cooperative situations). Would a lack of personal control be as tightly linked to negative outcomes in such situations? Not necessarily.

Various behavioral ecologists, anthropologists, and evolutionary psychologists have documented a long history of ancestral humans who faced numerous threats to survival and reproductive success, such as warfare, food sharing, and pathogenic diseases (Kaplan & Hill, 1985; Murray & Schaller, 2010; Sng et al., 2018; Wrangham & Peterson, 1996). To overcome such problems required ancestral humans to successfully coordinate attacks against rival hunter-gatherer groups, fairly allocate valued resources, and effectively

mitigate the spread of fatal diseases. All these tasks required ancestral humans to cooperate with others towards a common end (Henrich & Muthukrishna, 2021; Tooby & Cosmides, 2015; Trivers, 1971).

Notably, many such cooperative alliances are inherently interdependent, with an individual's (fitness-related) outcomes dependent on the actions of others (Balliet et al., 2017; Kelley et al., 2003). Consider, for instance, ancestral humans living in an environment with high levels of pathogen stress. In the evolutionary past, ensuring one's safety from infectious diseases (even those that would be considered mild by modern standards) was likely a high-stakes affair, especially without the aid of modern medical innovations for treating infected individuals. Not only did our ancestors have to behave in ways that prevented themselves from getting infected, but they also depended on others to behave in ways that mitigated its spread. In other words, no one individual had sole control over whether the optimal outcome was achieved and one's best interests—a pathogen-free environment—depended on the actions of everyone involved. Thus, even in benign situations marked by cooperation, people often experienced reduced control.

Importantly, in cooperative situations, what is beneficial for one individual is also beneficial for others. Because individuals possess similar (or corresponding) interests, the incentives or opportunities for any one person to maximize their own benefits at the expense of others—i.e., to exploit others—tend to be limited in such situations. Thus, despite a lack of control in such situations, individuals may not perceive themselves as being vulnerable to exploitation and, consequently, may not develop cynical beliefs. Indeed, such logic is borne out by various situations common to daily life. Consider, for

instance, romantic relationships. While a core characteristic of stable long-term relationships is mutual dependence—such that one's outcomes is no longer fully in one's control and instead depend in part on a partner's actions—many individuals do not experience high levels of cynicism and suspicion about their partner (e.g., Murray et al., 2006; Ross, 1991; Wieselquist et al., 1999). Similarly, consider ingroup relations. Much of ancestral and modern human living is marked by high levels of dependence on, and cooperation with, individuals who share genetic (e.g., kin) or material (e.g., ingroup members) interests (e.g., Kenrick et al., 2003; Cook, 1993); yet, people almost universally report having high levels of trust in their kin and ingroup (Welzel & Delhey, 2015).

This line of reasoning is consistent with broader theories on interdependent situations (Balliet et al., 2017; Kelley et al., 2003; Murray et al., 2006; Rusbult & Van Lange, 2008). According to such perspectives, interpersonal situations can vary in the extent to which conflicts of interests occur. In contrast to situations with *corresponding interests*, situations in which a good outcome for one actor necessarily leads to bad outcomes for another are described as having *conflicting interests* (Kelley & Thibaut, 1978; Rusbult & Van Lange, 2008; Van Lange & Balliet, 2015). Conflicting interests bears resemblance to a zero-sum mindset, which reflects a belief that one person's gain must entail another's loss (Johnson et al., 2022). Notably, situations marked by conflicting (vs. corresponding) interests afford greater and more opportunities for exploitative behavior (Balliet & Van Lange, 2013; Balliet et al., 2017).

Thus, I argue that whether a lack of personal control leads to cynicism

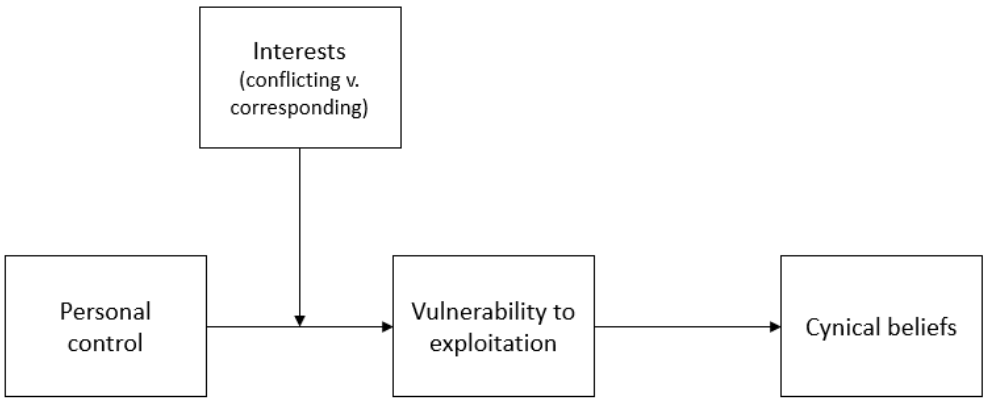
depends on the extent that the situation also affords exploitative behavior by others. A key factor influencing the level vulnerability to exploitation that one experiences in low-control situations may be whether others have corresponding or conflicting interests. When individuals perceive themselves to lack control in a situation where others indicate having conflicting interests, a sense of vulnerability may develop, leading to the emergence of cynical beliefs. In contrast, if others in the situation have similar or corresponding interests, the effect of a lack of control on perceptions of vulnerability to exploitation and, consequently, cynicism may be weakened.

Current research

The current dissertation examines variability in the (strength of the) link between personal control and cynicism. I propose that a lack of personal control should predict subsequent cynical beliefs through increased vulnerability to exploitation, and that this relationship should be moderated by the presence of corresponding (vs. conflicting) interests. In particular, I predict that the presence of corresponding (vs. conflicting) interests should weaken the control-cynicism link (see Figure 1).

Figure 1

Theoretical model



I conducted four studies to test this prediction. Studies 1 to 3 experimentally tested the theoretical model. Study 1 employed economic games, which offered the advantage of precision in the manipulation of control and corresponding interests in a situation by varying the costs, benefits, and tradeoffs in an interaction between partners. Study 2 manipulated the level of corresponding interests as a feature of interaction targets and examined their influence on the emergence of cynical beliefs. Then, study 3 served as a conceptual replication that addressed some methodological limitation in the previous experiments in a context common to daily life (promotions). An integrative data analysis (Curran & Hussong, 2009) conducted on all three experiments further examined the validity of the model. Finally, Study 4 employed data from the European Values Survey—a large cross-cultural dataset—to demonstrate that variability in the control-cynicism link can be tracked by indicators of corresponding (vs. conflicting) interests; thus, Study 4 demonstrated the generalizability of the theoretical model.

Study 1: Economic game experiment

Study 1 tested the theoretical model using economic games, which are typically presented as 2 × 2 matrices and are played between two players. Both players independently choose between one of two options, with payoffs for each player depending on the combination of decisions made (see Figure 2). As the degree of control and correspondence of interests can be precisely manipulated by varying the payoffs in these games (Kelley et al., 2003), economic games are well suited for testing the proposed model with relatively high levels of internal validity. Study 2 employed a 2 (control: *low* or *high*) × 2 (interests: *corresponding* or *conflicting*) between-subjects design. I predicted that payoffs reflecting low (vs. high) control should lead to greater vulnerability to exploitation and cynical beliefs when payoffs reflect conflicting interests; however, this effect should be attenuated when payoffs reflect corresponding interests.

Figure 2

Example of economic game (also used in the instructions)

		Your partner's (Initials: MD) decision	
		Hunt	Gather
Your decision	Hunt	4 / 4	1 / -1
	Gather	-1 / 1	1 / 1

Note. As an example, a player who chooses to hunt will only earn 4 points if their partner also chooses to hunt; else, the player *loses* 1 point while their partner *earns* 1 point.

Method

Participants

Power analysis indicated that a sample of 787 participants was required to detect an interaction with a small effect size ($\eta_p^2 = .010$) with a probability of .80. I oversampled slightly and recruited 810 participants in anticipation of potential exclusions. In studies 2 to 4, all participants were recruited via the research platform, Connect and received USD 1.20 each for their time. After excluding two participants who demonstrated a poor understanding of the instructions and two participants who reported disbelief in the manipulation, the final sample included 806 participants ($M_{age} = 39.58$, $SD_{age} = 12.10$; 400 males, 402 females, 4 did not report; 74.7% White).

Measures and procedure

A diagram of the study flow (Appendix A), the economic game manipulation (Appendix B), and questionnaires (Appendix C) can be found in the Appendices.

Economic game manipulation. Participants read that they would be playing three rounds of economic games with different and randomly selected partners in each round. Participants were given basic information about economic games and instructions on interpreting the payoffs; they read that each round of the economic game entailed viewing a payoff structure and deciding to either hunt (i.e., defect) or gather (i.e., cooperate) without knowing the decision of the other player. It was emphasized to participants that they should aim to maximize their payoffs. Thereafter, participants completed a practice trial assessing their understanding of the instructions; those who showed insufficient understanding ($N = 2$) were excluded from further analyses.

In reality, participants were never paired with other players. Instead,

each participant was randomly assigned to one of four conditions: low control, conflicting interests; low control, corresponding interests; high control, conflicting interests; or high control, corresponding interests [3]. In each condition, all three rounds of games reflected the same level of control (either *high* or *low*) and interests (either *corresponding* or *conflicting*), though the specific payoffs in each round differed (see Appendix B). Control (or power; e.g., van Vugt & Tybur, 2015) was manipulated such that players in the low control condition had zero influence over the payoffs they received. That is, hunting and gathering yielded the same average payoff—in Figure 3(a), the average payoff was +3 for both hunting and gathering—and the specific payoff participants received (i.e., +10 or -4) depended *entirely* on a partner's decision [4]. In contrast, in the high control condition, participants were in full control of their own payoffs: a partner's decision had no influence on their payoffs whatsoever (see Figure 3(d)). Interests were manipulated such that the best outcomes for one participant also yielded the worst (best) outcome for the other participant in the conflicting (corresponding) interests condition (see Figure 3(b) and (c) respectively).

[3] Columbus et al. (2019) detailed how indices tracking the level of control (or power) and correspondence in economic games can be calculated with the different variance components in each payoff structure. Indices range from -1.00 (conflicting interests or low power) to +1.00 (corresponding interests or high power). In study 2, payoffs for low (high) control have been designed to produce a power index of -1.00 (+1.00); payoffs for the corresponding (conflicting) interests conditions have been designed to produce a correspondence index of +1.00 (-1.00). See supplementary analyses (*S1: Power and correspondence indices for study 1*) for derivations.

[4] Economic games are often employed by interdependence scholars (Kelley et al., 2003), who discuss control in terms of one's power in a situation (see also van Vugt & Tybur, 2015). Notably, distinctions are made between different variants of power. In one variant, the first person has complete control over his and a second person's outcomes, such that the second person has zero influence over any outcomes; here, the first person has *actor control* (over his own outcomes) and *partner control* (over the partner's outcomes). In another variant, the second person has at least some influence over his own outcomes; the first person has actor control and *joint control* (over the partner's outcomes) (Kelley et al., 2003). In this study, I use the first variant of power in defining control.

Figure 3

Example of games in a) low control, conflicting interests b) high control, conflicting interests c) low control, corresponding interests d) high control, corresponding interests conditions

a)

		Your partner's (Initials: MD) decision	
		Gather	Hunt
Your decision	Gather	-4 / 10	10 / -4
	Hunt	-4 / 10	10 / -4

b)

		Your partner's (Initials: MD) decision	
		Gather	Hunt
Your decision	Gather	10 / -4	10 / -4
	Hunt	-4 / 10	-4 / 10

c)

		Your partner's (Initials: MD) decision	
		Gather	Hunt
Your decision	Gather	10 / 10	-4 / -4
	Hunt	10 / 10	-4 / -4

d)

		Your partner's (Initials: MD) decision	
		Gather	Hunt
Your decision	Gather	10 / 10	10 / 10
	Hunt	-4 / -4	-4 / -4

Vulnerability to exploitation. In each round, participants made their decision to either hunt or gather after viewing the payoffs. Then, participants responded to a single item measure of vulnerability to exploitation ("In this situation, my partner can exploit me for his/her own gain") on a scale from 1 = *strongly disagree* to 5 = *strongly agree*. Ratings were highly correlated across all three rounds (all *r*s ≥ .68); accordingly, I derived a composite score by

computing their mean for our analyses.

Situation-specific cynicism. Then, participants responded to three items measuring their situation-specific cynical distrust (Greenglass and Julkenen, 1989): "In this type of situation, I would wonder what hidden reason my partner may have if he/she did something nice for me; In this type of situation, my partner may inwardly dislike putting him/herself out to help me; In this type of situation, it would be safer not to trust my partner" on a 5-point scale from *strongly disagree* to *strongly agree.* The measure showed good reliability in each ($\alpha_{\text{round 1}} = .82$; $\alpha_{\text{round 2}} = .86$; $\alpha_{\text{round 3}} = .88$) and across all rounds ($\alpha = .94$). Thus, I derived a composite cynical attribution score by computing the mean across all three rounds.

Generalized cynicism. After all three rounds of the economic games, participants responded to Greenglass and Julkenen's (1989) 8-item cynical distrust scale (e.g., "Most people inwardly dislike putting themselves out to help other people") on 5-point scale from *strongly disagree* to *strongly agree* ($\alpha = .89$). This allowed me to explore the possibility that situation-specific cynicism (i.e., about the target in this situation) could be differentiated from generalized cynicism (i.e., about others in general). I made no *a priori* predictions but noted two possibilities. On the one hand, people's situation-specific cynicism may be divorced from their views of human nature in general. Thus, the same moderation effect observed on one's situational cynicism may not emerge for generalized cynicism. On the other hand, one's situation-specific cynicism may spill over into one's generalized cynicism; thus, the moderation effects should emerge for both types of cynicism. Notably, both cynicism measures were positively but only moderately

correlated at $r = .40$, $p < .001$, indicating that both measures may be tracking distinct types of cynical perceptions.

Results

Table 1 reports the descriptives and correlations for study 1, while Table 2 breaks down the descriptives of the key outcomes by conditions.

Table 1

Statistics and descriptives of key variables in study 1

	M	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. control	-	-	-													
2. interests	-	-	-.02	-												
3. R1 vte	2.68	1.45	**-.17**	**-.39**	-											
4. R2 vte	2.47	1.38	**-.16**	**-.38**	**.72**	-										
5. R3 vte	2.54	1.44	**-.18**	**-.39**	**.68**	**.73**	-									
6. vte mean	2.56	1.28	**-.19**	**-.43**	**.89**	**.91**	**.90**	(.88)								
7.R1 sit. cyn.	2.81	1.07	-.04	**-.39**	**.53**	**.48**	**.49**	**.56**	(.82)							
8.R2 sit. cyn.	2.68	1.10	-.02	**-.39**	**.49**	**.62**	**.53**	**.61**	**.77**	(.86)						
9. R3 sit. cyn.	2.76	1.17	-.03	**-.42**	**.52**	**.54**	**.66**	**.64**	**.79**	**.85**	(.88)					
10. Sit. cyn.	2.75	1.04	-.03	**-.43**	**.55**	**.59**	**.60**	**.64**	**.92**	**.94**	**.94**	(.94)				
11. gen. cyn.	3.05	0.86	**.09**	-.07	**.16**	**.16**	**.19**	**.19**	**.38**	**.35**	**.37**	**.40**	(.89)			
12. Sex	-	-	-.03	.01	.01	.01	.02	.02	-.04	-.02	-.01	-.03	**-.11**	-		
13. Age	39.6	12.1	-.01	.04	-.02	-.02	-.04	-.03	**-.10**	**-.08**	**-.07**	**-.09**	**-.30**	**.13**	-	
14. Ethnicity	-	-	-.04	.03	**.09**	**.09**	**.11**	**.11**	**.11**	**.10**	**.13**	**.12**	**.16**	-.00	**-.27**	-
15. SES	5.06	1.74	-.04	-.00	.00	.04	-.01	.01	.00	.01	-.02	-.00	-.07	-.01	.05	.02

Notes. Correlations in bold are significant ($p < .05$). Diagonals report reliability in parentheses. Control coded 0 = low, 1 = high. Interests coded 0 = conflicting, 1 = corresponding. Sex coded 0 = male, 1 = female. R1/2/3 = Round 1/2/3. Vte = vulnerability to exploitation Sit. cyn.= Situational cynicism. Gen. Cyn. = generalized cynicism. SES = socioeconomic status.

Table 2

Descriptives of key outcomes by condition in study 1

		Low control		**High control**		**Mean difference**	**effect size**
Outcome	**Interests**	***M***	***SE***	***M***	***SE***	**(low minus high)**	**(η_p^2)**
Vulnerability	Conflicting	3.54 ^{a}	0.08	2.70 ^{a}	0.08	0.83 ***	.065
	Corresponding	2.10 ^{b}	0.08	1.93 ^{b}	0.08	0.16	.003
Situational	Conflicting	3.29 ^{a}	0.07	3.10 ^{a}	0.07	-0.19 *	.005
cynicism	Corresponding	2.29 ^{b}	0.07	2.32 ^{b}	0.07	-0.04	.000
Generalized	Conflicting	3.04 ^{a}	0.06	3.19 ^{a}	0.06	-0.15 †	.003
cynicism	Corresponding	2.92 ^{a}	0.06	3.07 ^{a}	0.06	-0.15 †	.004

Note. For each outcome, different subscripts within each column denote significant differences. † $p < .10$, * $p < .05$, *** $p < .001$

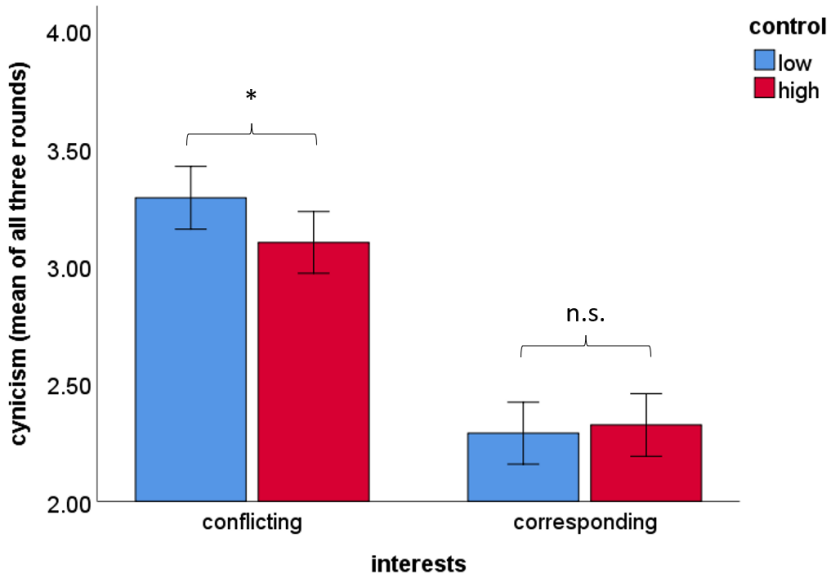
Does control interact with interests to predict situational cynicism?

I ran a general linear model (GLM) with control (dummy coded as 0 = low control, 1 = high control) and interests (dummy coded as 0 = conflicting, 1 = corresponding) as predictors and situation-specific cynicism as the outcome. Situations with low control (M = 2.79, SE = 0.05) did not lead to more situation-specific cynicism than high control situations (M = 2.71, SE = 0.05), F (1, 802) = 1.37, p = .243; however, situations with conflicting (vs. corresponding) interests led to more situation-specific cynicism, F (1, 802) = 179.94, p < .001, η_p^2 = .183 (conflicting: M = 3.20, SE = 0.05; corresponding: M = 2.31, SE = 0.05).

A marginal control × interests interaction emerged, F (1, 802) = 2.89, p = .090, η_p^2 = .004, and I analyzed the relevant simple effects with Bonferroni-corrected pairwise comparisons. In situations with corresponding interests, low control (M = 2.29, SE = 0.07) did not lead to more situation-specific cynicism than high control (M = 2.32, SE = 0.07), p = .707. In contrast, in situations with conflicting interests, low control (M = 3.29, SE = 0.07) caused more situation-specific cynicism high control (M = 3.10, SE = 0.07), p = .043 (see Figure 4). Notwithstanding the lack of a significant interaction term, the findings were consistent with the theoretical model.

Figure 4

Interaction between control and interests on situation-specific cynicism in Study 1



Note. Error bars reflect standard errors. * $p < .05$, n.s. = non-significant

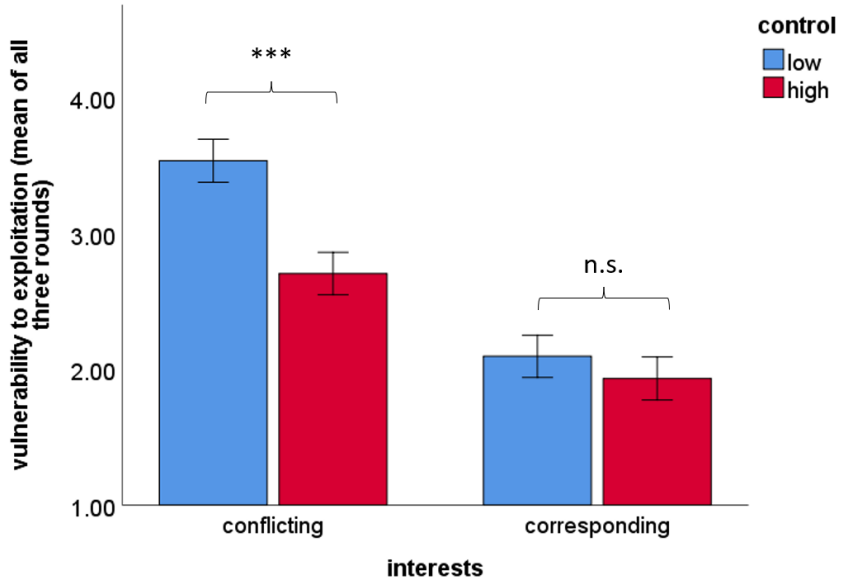
Does control interact with interests to predict vulnerability to exploitation?

I repeated the analysis with vulnerability to exploitation (i.e., mediator) as an outcome. Situations with low control (M = 2.82, SE = 0.06) led to more vulnerability than those high control (M = 2.32, SE = 0.06), F (1, 802) = 40.00, $p < .001$, $\eta_p^2 = .048$. Likewise, situations with conflicting interests (M = 3.12, SE = 0.06) led to more vulnerability than those with corresponding interests (M = 2.01, SE = 0.06), F (1, 802) = 198.05, $p < .001$, $\eta_p^2 = .198$. Importantly, a control × interests interaction emerged, F (1, 802) = 18.03, $p < .001$, $\eta_p^2 = .022$. In situations with corresponding interests, low control (M = 2.10, SE = 0.08) did not lead to greater vulnerability than high control (M = 1.93, SE = 0.08), $p = .142$. In contrast, in situations with conflicting interests, low control (M = 3.54, SE = 0.08) led to more vulnerability than high control

(M = 2.70, SE = 0.08), p < .001 (see Figure 5). Notably, the simple effect of control was over 20 times stronger when interests were conflicting than corresponding (η_p^2 $_{\text{conflicting}}$ = .065; η_p^2 $_{\text{corresponding}}$ = .003).

Figure 5

Interaction between control and interests on vulnerability to exploitation in Study 1



Note. Error bars reflect standard errors. *** p < .001, n.s. = non-significant

Does the theorized moderated mediation model hold?

In Studies 1 to 3, I employed the SPSS macro PROCESS (model 7; Hayes, 2022) to conduct the moderated mediation analyses. Table 3 reports the regression coefficients and 95% confidence intervals (see figure 6). As described above, a significant interaction between the predictor (control) and moderator (interests) on the mediator (vulnerability to exploitation) emerged, B = 0.67, SE = 0.16, t(802) = 4.25, p < .001, 95% CI [0.36, 0.98] (Model 1). Furthermore, the mediator positively predicted the outcome (cynical

attributions), $B = 0.54$, $SE = 0.02$, t (802) = 24.18, $p < .001$, 95% CI [0.49, 0.58] (Model 2). In support of the theorized moderated mediation model, the bootstrapped index of moderated mediation was significant, $B = 0.36$, $SE = 0.09$, 95% CI [0.19, 0.53]. An examination of the conditional indirect effects revealed that vulnerability to exploitation mediated the link between control and cynical attributions when interests were conflicting, $B = -0.45$, $SE = 0.07$, 95% CI [-0.58, -0.32], but not when interests were corresponding, $B = -0.09$, $SE = 0.06$, 95% CI [-0.20, 0.02]. In other words, low (vs. high) control led to greater vulnerability to exploitation and cynical attributions only when interests were perceived as conflicting, but not corresponding.

Table 3

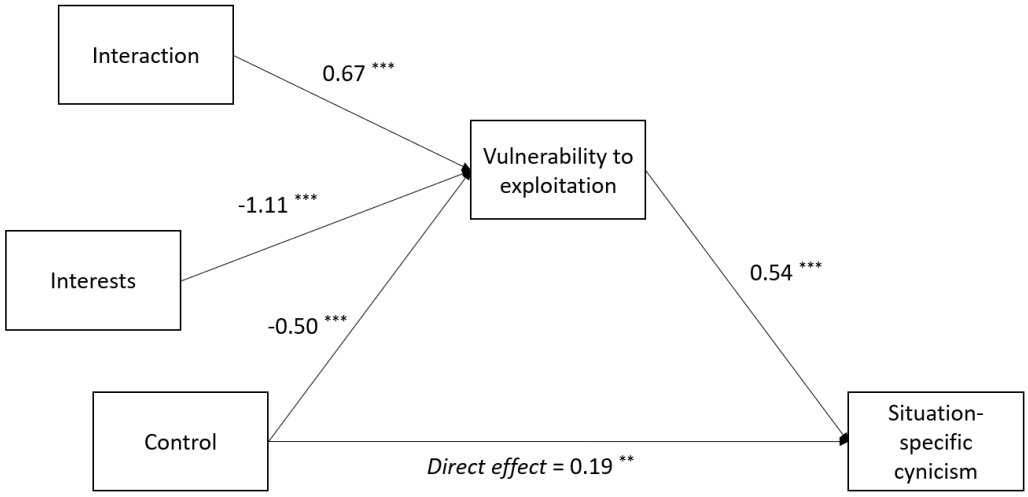
Moderated mediation results for Study 1

	Model 1			**Model 2**		
	DV: vulnerability to exploitation			**DV: cynicism**		
Predictors	***B***	***SE***	**95% CI**	***B***	***SE***	**95% CI**
Constant	2.57***	0.04	[2.49, 2.64]	1.37***	0.06	[1.25, 1.50]
Control	-0.50***	0.08	[-0.65, -0.34]	0.19**	0.06	[0.08, 0.31]
Interests	-1.11***	0.08	[-1.26, -0.95]			
Control x Interests	0.67***	0.16	[0.36, 0.98]			
Vulnerability				0.54***	0.02	[0.49, 0.58]
R^2	.24			.42		
F	84.40			292.95		
Indirect effect				-0.26	0.05	[-0.36, -0.16]
Conditional effects of	**control → vulnerability**			**control → vulnerability → cyn.**		
Conflicting interests	-0.83***	0.11	[-1.05, -0.61]	-0.45	0.07	[-0.58, -0.32]
Corresponding interests	-0.16	0.11	[-0.38, 0.06]	-0.09	0.06	[-0.20, 0.02]

Notes. cyn.= situational cynicism. Unstandardized coefficients are reported. 10,000 bootstrap samples used for mediation analyses. ** $p < .01$, *** $p < .001$.

Figure 6

Theorized moderated mediation model in Study 1



Note. Unstandardized effects are shown. ** $p < .01$, *** $p < .001$

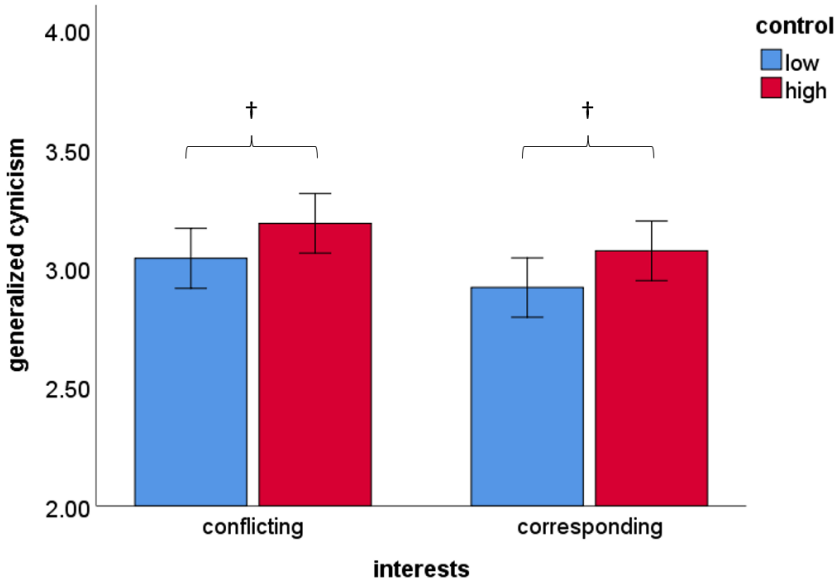
Does control interact with interests to predict generalized cynicism?

Finally, as a set of exploratory analyses, I ran another GLM with control and interests as predictors and generalized cynicism as the outcome. The control manipulation predicted generalized cynicism, F (1, 802) = 5.79, p = .016, η_p^2 = .007; interestingly, situations with low control (M = 2.98, SE = 0.04) led to *lower* general cynicism than situations with high control (M = 3.13, SE = 0.04). Interests marginally predicted generalized cynicism, F (1, 802) = 3.61, p = .058, η_p^2 = .005; situations with conflicting interests (M = 3.11, SE = 0.04) led to higher general cynicism than situations with corresponding interests (M = 3.00, SE = 0.04). A control × interests interaction did not emerge, F (1, 802) = 0.00, p = .953, indicating that the effect of control on generalized cynicism was not qualified by interests. Low (vs. high) control marginally reduced generalized cynicism in situations with conflicting (M_{low} = 3.04, SE_{low} = 0.06; M_{high} = 3.19, SE_{high} = 0.06; p = .098) and corresponding

(M_{low} = 2.92, SE_{low} = 0.06; M_{high} = 3.07, SE_{high} = 0.06; p = .081) interests (see Figure 7).

Figure 7

Interaction between control and interests on generalized cynicism in Study 1



Note. Error bars reflect standard errors. † $p < .10$

Discussion

On the whole, findings from study 1 supported the theoretical model. While the interaction between control and interests on situational cynicism was only marginal, the simple effects emerged in the predicted direction. That is, low (vs. high) control led to more situation-specific cynicism only when interests were conflicting. Given that the overall interaction term did not appear to be robust, these simple effects should be interpreted with caution. The moderating effect of (corresponding vs. conflicting) interests was much stronger for control's effect on the mediator, vulnerability to exploitation; low (vs. high) control only led to greater vulnerability to exploitation when

interests were conflicting, but not when interests were corresponding. In particular, the effect of control on vulnerability was 20 times stronger when interests were conflicting (vs. corresponding). Most importantly, and consistent with the theorized moderated mediation model, vulnerability to exploitation mediated the link between control and cynical attributions when interests were conflicting, but not when interests were corresponding. To our knowledge, these findings represent the first demonstration of support for the role of vulnerability to exploitation as a mediator in the link between personal control and cynicism (Stavrova & Ehlebracht, 2018a; 2019). Finally, in a set of exploratory analyses, I found that one's cynicism towards specific targets were relatively divorced from one's cynicism towards people in general; we discuss the implications of this finding in the **General Discussion** (in relation to issues of trait vs. state cynicism).

Study 2: Vignette experiment 1 (raffle scenario)

Whereas Study 1 investigated interests as a characteristic of the situation, Study 2 examines the idea that some individuals naturally afford more corresponding or conflicting interests and that interacting with such individuals might differentially impact the effect of control on cynicism.

From an evolutionary perspective, individuals are inextricably bound to their kin by shared genetic interests. That is, behaving in ways that benefitted (the evolutionary fitness of) one's genetic relatives would have promoted greater reproduction of copies of one's genes and, thus, directly advanced one's own interests at a genetic level (Eberhard, 1975). Thus, more than for non-kin, helping one's genetic relatives should entail greater benefits (helping one's kin ensures more beneficial fitness outcomes) and fewer costs (one's kin are less likely to behave exploitatively or harm you) for the self (Ackerman & Kenrick, 2008, p. 133; Barclay & van Vugt, 2015; Daly & Wilson, 1988). Accordingly, members of one's kin should afford more opportunities for interactions that entail corresponding interests.

However, even among unrelated individuals, some were more likely than others to advance one's own interests. Much research indicates that people are more likely to cooperate with, provide aid to, and behave less exploitatively against those who also identify as being part of the same group (e.g., close allies or ingroup members; De Cremer & van Vugt, 1999; Kaplan & Hill, 1985; Majolo et al., 2006; Park & Schaller, 2005; Trivers, 1971). Indeed, from an evolutionary perspective, both kin and close non-kin likely constituted similarly rich sources of social support and benefits and interactions with one's close non-kin could be akin to helping one's genetic

relatives and could, critically, advance one's own fitness interests (Ackerman et al., 2007; Balliet et al., 2017). This logic suggests that close non-kin allies (vs. strangers) should afford opportunities for interactions with more corresponding (than conflicting) interests. Accordingly, and in line with the theoretical model, whereas experiencing lower levels of control in interactions with unrelated non-kin (i.e., strangers) might lead to perceptions of vulnerability to exploitation and, subsequently, cynicism, this effect should weaken in similar interactions with one's kin or close non-kin. To test this reasoning, we employed a 2 (control: *low* and *high*) × 3 (target: *kin, close nonkin*, and *stranger*) between-subjects design.

Method

Participants

Power analysis indicated that a sample size of 967 participants was required to detect an interaction with a small effect size ($\eta^2 = .010$) at a probability of .8. I oversampled and recruited 1000 participants. In total, 35 participants were excluded failing to follow the instructions (e.g., typing in a name instead of initials)—results did not differ when these participants were included—leaving a final sample of 965 participants ($M_{age} = 40.17$, $SD_{age} = 13.00$; 484 males, 481 females; 55.2% with at least a bachelor's degree; 74.2% White).

Measures and procedure

A diagram of the study flow (Appendix D), the experimental manipulations, (Appendix E), and questionnaires (Appendix F) can be found in the Appendices.

Experimental manipulation. Participants read vignettes describing

situations that varied in the level of control (*low* or *high*) afforded and targets (*kin*, *close non-kin*, or *stranger*) involved. Participants were randomly assigned to one of six conditions: high control, kin; low control, kin; high control, close non-kin; low control, close non-kin; high control, stranger; low control, stranger (Appendix E). First, participants were asked to recall and reflect on their relationship with an assigned target (stranger, kin, or close non-kin), with definitions of their target type provided. For instance, participants assigned to the close non-kin condition were shown the following passage:

> Think of someone whom you have a personal relationship with but is not part of your kin. This might be someone whom you know well and feel close to (e.g., close friend, co-worker, neighbor), but should not be someone that you are genetically related (e.g., biological parents, siblings, extended family).Once ready, please type in the initials of this person's name (e.g., JD for Jane Doe; MDB for Matt Dan Baker).
>
> Here, we would like you to reflect on your relationship with XXX. What kind of person is XXX like? What is your relationship with XXX like? How does an interaction with XXX usually go? How do you feel about him/her?

Thereafter, participants read about a hypothetical situation in which they and their assigned target were given 10 raffle tickets and that either they (i.e., high control) or the target (i.e., low control) were tasked with allocating the tickets among themselves. For instance, participants assigned to the close non-kin, low control condition read the following:

> You and XXX have been selected to enter a raffle where the top prize is a very large sum of money! In total, 100 raffle tickets will be entered into the draw, so each ticket provides a 1% chance of winning. A total of ten tickets have been allocated to you and XXX; that is, the ten tickets are to be shared between XXX and yourself. XXX has been asked to decide how to allocate the tickets between him/herself and you. XXX can allocate the tickets however he/she wishes. That is, XXX is free to allocate as many (or as few) of the ten tickets to you as he/she likes, from a minimum of zero tickets to a maximum of ten tickets. XXX will be making his/her decision in private and will not have to inform you about (or seek your approval for) the final decision.

Manipulation check. As a manipulation check for interests, participants rated the extent to which their interests overlapped with their assigned target (1 = *strongly disagree*, 7 = *strongly agree*); for control, participants rated the extent to which either they or the target had most control in the situation described (1 = *definitely XXX*; 5 = *definitely myself*).

Mediator: vulnerability to exploitation. Thereafter, participants responded to three items measuring the extent to which they perceived high levels of vulnerability to exploitation in the situation ("In the situation just described, it is likely that XXX would exploit me for his/her own gain"; "In the situation just described, XXX could easily take advantage of me for his/her own interest"; "In the situation just described, I would feel vulnerable to exploitation by XXX") (1 = *strongly disagree*; 7 = *strongly agree*) (α = .84).

Cynicism. Finally, participants responded to seven items from Greenglass and Julkenen's (1989) cynical distrust scale, which was adapted to refer to the target in the specific context (e.g., In the situation just described (and other similar situations), I think XXX would lie to get ahead") (1 = *strongly disagree*, 7 = *strongly agree*) (α = .94). One item from the original scale ("In this situation, most people make friends because friends are likely to be useful to them") was not included given its lack of face validity in this context.

Results

Table 4 reports the descriptives and correlations between variables in Study 2, while Table 5 breaks down the descriptives for the key outcomes.

Table 4

Descriptives and correlations for Study 2

	M	*SD*	1	2	3	4	5	6	7	8	9	10
1. Control	-	-	-									
2. Target	-	-	-.00	-								
3. Control (MC)	2.96	1.82	**.88**	.00	-							
4. Target (MC)	5.13	1.31	.02	**-.30**	.03	-						
5. Vulnerability	3.07	1.75	**-.44**	**.37**	**-.45**	**-.30**	(.84)					
6. Cynicism	2.70	1.55	**-.07**	**.55**	-.05	**-.48**	**.65**	(.94)				
7. Sex	-	-	-.01	.01	-.00	.02	-.01	-.02	-			
8. Age	-	-	.00	.06	-.01	**.06**	-.03	**-.10**	**.09**	-		
9. Education	-	-	-.05	-.01	-.05	.00	.02	.03	.00	.06	-	
10. Ethnicity	-	-	.01	-.04	.01	**-.08**	.05	**.10**	**-.07**	**-.28**	.04	-
11. SES	4.95	1.70	.00	-.00	-.01	.06	-.02	-.04	-.00	**.08**	**.35**	-.00

Notes. Correlations in bold are significant at $p < .05$ level. Diagonals report reliability in parentheses. Control coded 0 = low, 1 = high; Target coded as 0 = kin, 1 = close nonkin, 2 = stranger; Sex coded as 0 = male, 1 = female. MC = manipulation check.

Table 5

Descriptives for key outcomes by conditions in Study 2

		Low control		**High control**		**Mean difference**	**effect size**
Outcome	**Target**	***M***	***SE***	***M***	***SE***	**(low minus high)**	**(η_p^2)**
vulnerability	kin	2.94 [a]	0.11	1.94 [a]	0.11	1.00***	.044
	close nonkin	3.27 [a]	0.11	2.26 [a]	0.11	1.01***	.044
	stranger	5.35 [b]	0.11	2.73 [b]	0.11	2.62***	.225
cynicism	kin	1.94 [a]	0.09	1.96 [a]	0.10	-0.02	.000
	close nonkin	2.28 [b]	0.10	2.05 [a]	0.10	0.23†	.003
	stranger	4.29 [c]	0.10	3.88 [b]	0.10	0.41**	.009

Note. For each outcome, different subscripts within each column denote significant differences. † $p < .10$, ** $p < .01$, *** $p < .001$

Manipulation checks

Participants in the low control condition ($M = 1.37$, $SD = 0.88$) reported less control over the situation than those in the high control condition ($M = 4.58$, $SD = 0.85$), t (963) = -57.51, $p < .001$, Cohen's $d = 3.70$; thus, the control manipulation was effective. A one-way ANOVA revealed an effect of target on perceptions of overlapping interests, F (2, 959) = 98.61, $p < .001$, $\eta_p^2 = .170$. Participants perceived fewer overlapping interests with strangers ($M = 4.36$, $SE = 0.07$) than close nonkin ($M = 5.63$, $SE = 0.07$) and kin ($M = 5.36$,

SE = 0.07) (both *p*s < .001); interestingly, participants perceived more overlapping interests with close nonkin than kin ($p = .011$); the findings suggest that the manipulation was largely successful [5].

Does control interact with target to predict cynicism?

I ran a 3 × 2 GLM with control (dummy coded as 0 = low control, 1 = high control) and target (coded as 0 = kin, 1 = close nonkin, 2 = stranger) as predictors and cynicism as an outcome. Participants in the low control condition ($M = 2.84$, $SE = 0.06$) reported greater cynicism than those in the high control condition ($M = 2.63$, $SE = 0.06$), $F(1, 959) = 6.97$, $p = .008$, $\eta_p^2 = .007$. A main effect of target also emerged, $F(2, 959) = 290.47$, $p < .001$, $\eta_p^2 = .377$; compared to a stranger ($M = 4.08$, $SE = 0.07$), participants reported lower levels of cynicism when imagining an interaction with a kin ($M = 1.95$, $SE = 0.07$) and close nonkin ($M = 2.16$, $SE = 0.07$), (both *p*s < .001); cynicism ratings for kin and close nonkin differed marginally ($p = .079$).

A marginal control × target interaction emerged, $F(2, 959) = 2.47$, $p = .085$, $\eta_p^2 = .005$ (see Figure 8). When imagining an interaction with kin, the simple effect of control on cynicism was nonsignificant, ($M_{low} = 1.94$, $SE_{low} = 0.09$; $M_{high} = 1.96$, $SE_{high} = 0.10$), $p = .899$. When imagining interactions with

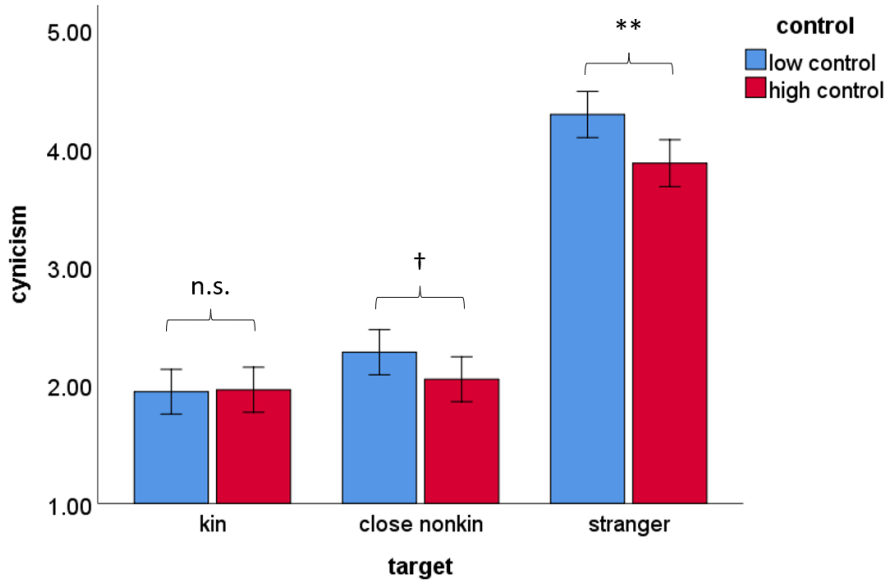
[5] MVV pointed out during the dissertation defense that it is possible that, in specific target conditions (e.g., kin), people may have been consistently thinking of individuals over whom they had little/a lot of control over (e.g., child/patriarch). Accordingly, manipulations of target may have influenced perceptions of control. While this alternative makes sense, it was (thankfully) *not* borne out by the data. A one-way ANOVA testing the effect of target on the manipulation check item for control was non-significant, $F(1, 962) = 0.02$, $p = .986$. So, manipulation of target had no influence on people's perceptions of control. I also examined the possibility that manipulations of control could have influenced perceptions of shared interests; likewise, an independent samples t-test revealed this to *not* be the case, $t(963) = -0.64$, $p = .523$.

During the dissertation defense, KT suggested one reason why people rated greater overlapping interests with close nonkin (vs. kin): participants could have been thinking of a romantic partner, whom people report a very high level of corresponding interests with (Columbus et al., 2021). This is highly plausible; unfortunately, the current study did not request for participants to describe the relationship they had with the target they were thinking of.

a close nonkin, low (vs. high) control led to marginally greater cynicism (M_{low} = 2.28, SE_{low} = 0.10; M_{high} = 2.05, SE_{high} = 0.10), p = .090. Critically, in imagined interactions with a stranger, low (vs. high) control resulted in significantly greater cynicism (M_{low} = 4.29, SE_{low} = 0.10; M_{high} = 3.88, SE_{high} = 0.10), p = .003. It is worth noting that the simple effect of control was three times stronger for strangers (η_p^2 = .009) than that for close nonkin (η^2 = .003) and was null for kin (η_p^2 =.000). Notwithstanding the lack of a significant interaction term, these findings were broadly consistent with my reasoning.

Figure 8

Interaction between control and interests on cynicism in Study 2



Note. Error bars reflect standard errors. † $p < .10$, ** $p < .01$

Does control interact with target to predict vulnerability to exploitation?

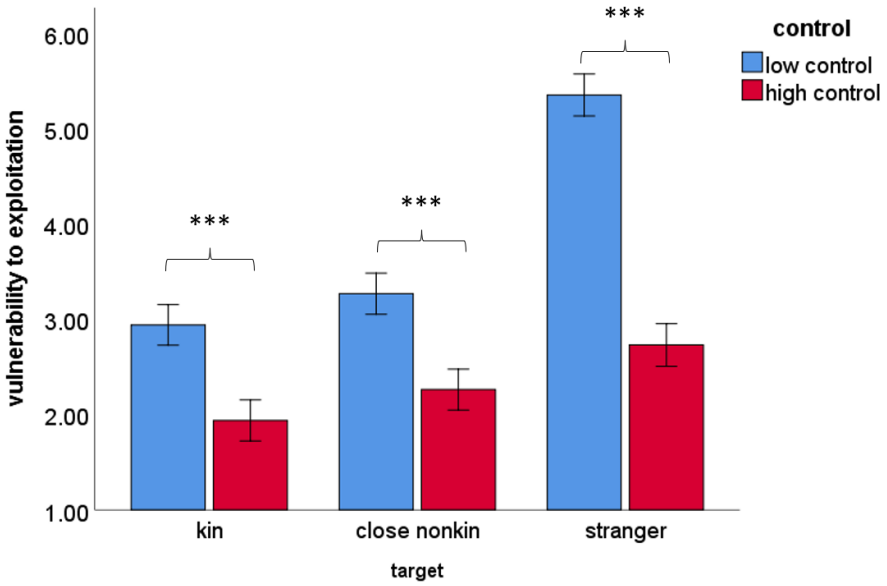
I repeated the analyses with vulnerability to exploitation as an outcome. Participants in the low control condition (M = 3.85, SE = 0.06) reported greater vulnerability than those in the high control condition (M =

2.31, SE = 0.06), F (1, 959) = 303.15, p < .001, η_p^2 = .240. A main effect of target also emerged, F (2, 959) = 119.18, p < .001, η_p^2 = .199; compared to a stranger (M = 4.04, SE = 0.08), participants reported less vulnerability when imagining an interaction with a kin (M = 2.44, SE = 0.08) and close nonkin (M = 2.76, SE = 0.08), (both ps < .001); in turn, vulnerability ratings for close nonkin were higher than for kin (p = .007).

The control × target interaction was significant, F (2, 959) = 36.16, p < .001, η_p^2 = .070 (see Figure 9). Simple effects of control on vulnerability were significant for all three targets: Experiencing low (vs. high) levels of control led to more vulnerability when imagining interactions with kin (M_{low} = 2.94, SE_{low} = 0.11; M_{high} = 1.94, SE_{high} = 0.11; p < .001), close nonkin (M_{low} = 3.27, SE_{low} = 0.11; M_{high} = 2.26, SE_{high} = 0.11; p < .001), and strangers (M_{low} = 5.35, SE_{low} = 0.11; M_{high} = 2.73, SE_{high} = 0.11; p < .001). Critically, the simple effect of control was over five times larger when imagining an interaction with strangers (η_p^2 = .225) than for kin (η_p^2 = .044) and close nonkin (η_p^2 = .044); in other words, having low (vs. high) control had a far greater impact on one's perception of vulnerability in interactions with strangers (who share relatively fewer corresponding interests) than with kin and close nonkin (who share relatively more corresponding interests).

Figure 9

Interaction between control and interests on vulnerability to exploitation in Study 2



Note. Error bars reflect standard errors. *** $p < .001$

Does the theorized moderated mediation model hold?

Table 6 reports the regression coefficients and 95% confidence intervals from the analyses here while Figure 10 displays them graphically. I entered control (coded 0 = low control, 1 = high control) as a predictor, target (0 = kin, 1 = close nonkin, 2 = stranger) as a moderator, vulnerability to exploitation as a mediator, and cynicism as an outcome (i.e., SPSS macro PROCESS model 7). Since target was entered as a multicategorical predictor, the effect of target was analyzed with two contrasts (*kin* vs. *close nonkin*; *kin* vs. *stranger; close nonkin*); findings for each contrast are reported accordingly.

The effect of control on vulnerability differed for kin and strangers, $B = -1.62$, $SE = 0.22$, $t(959) = -7.42$, $p < .001$, 95% CI [-2.05, -1.19], but not

between kin and close nonkin, B = -0.00, SE = 0.21, t(959) = -0.02, p = .986, 95% CI [-0.42, 0.42] (see Table 6, Model 1). In other words, the effect of control on vulnerability was stronger when interacting with strangers (B = -2.62, SE = 0.16, 95% CI [-2.93, -2.31]) than with one's kin (B = -1.00, SE = 0.15, 95% CI [-1.30, -0.70]) or close nonkin (B = -1.01, SE = 0.15, 95% CI [-1.30, -0.71]). Furthermore, our theorized mediator (vulnerability) positively predicted cynicism, B = 0.68, SE = 0.02, t(959) = 29.90, p < .001, 95% CI [0.63, 0.72] (Table 6, Model 2).

Next, I examined the indirect effects of control on cynicism through vulnerability for each target. The mediation effects emerged for all targets: that is, vulnerability mediated the control-cynicism link for kin, B = .-0.68, SE = .0.11, 95% CI [-0.89, -0.47], close nonkin, B = -0.68, SE = 0.11, 95% CI [-0.90, -0.47], and strangers, B = -1.78, SE = 0.12, 95% CI [-2.02, -1.54]. However, pairwise comparisons revealed that the indirect effect was significantly stronger for strangers than for kin (B = -1.10, SE = 0.15, 95% CI [-1.39, -0.82]) or close nonkin (B = -1.10, SE = 0.15, 95% CI [-1.39, -0.80]); in contrast, the indirect effects did not differ in strength for kin and close nonkin, B = -0.00, SE = 0.15, 95% CI [-0.29, 0.29]. Thus, low control led to vulnerability and cynicism more strongly for targets who afforded conflicting interests (strangers) than corresponding interests (kin or close nonkin).

Table 6

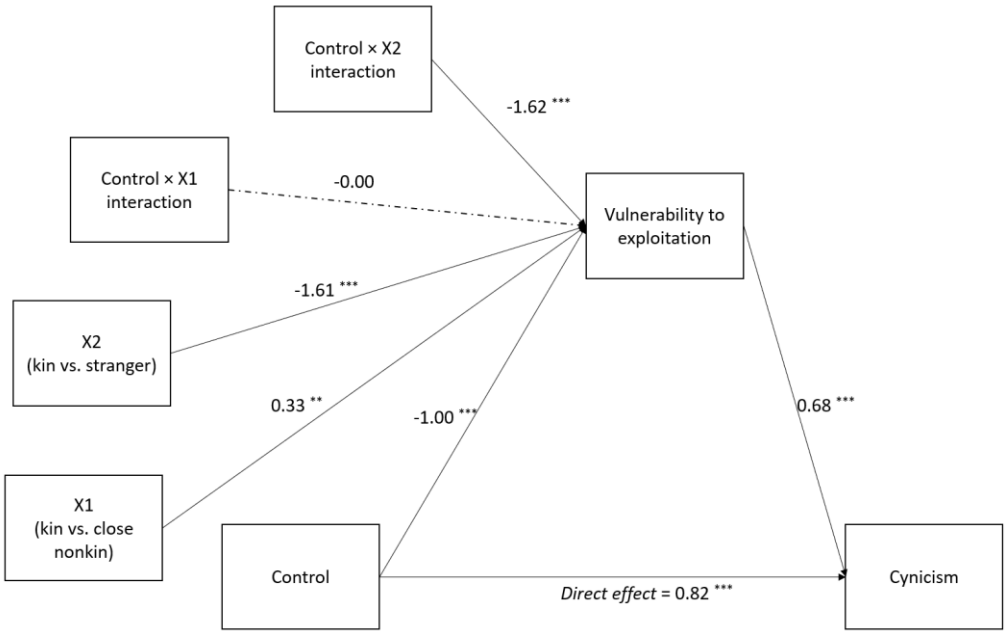
Moderated mediation results for Study 2

	Model 1 DV: vulnerability			Model 2 DV: cynicism		
Predictors	***B***	***SE***	**95% CI**	***B***	***SE***	**95% CI**
Constant	2.44***	0.08	[2.29, 2.59]	0.62***	0.08	[0.47, 0.78]
Control	-1.00***	0.15	[-1.30, -0.70]	0.82***	0.08	[0.67, 0.98]
Kin vs. close nonkin (X1)	0.33**	0.11	[0.12, 0.54]			
Kin vs. stranger (X2)	1.61***	0.11	[1.39, 1.82]			
Control × X1	-0.00	0.21	[-0.42, 0.42]			
Control × X2	-1.62***	0.22	[-2.05, -1.19]			
Vulnerability				0.68***	0.02	[0.63, 0.72]
R^2	.39			.48		
F	122.1			451.5		
Indirect effect				-1.03	0.08	[-1.20, -0.87]
Conditional effects of	**control → vulnerability**			**control → vulnerability → cyn.**		
Kin	-1.00***	0.15	[-1.30, -0.70]	-0.68	0.11	[-0.89, -0.47]
Close nonkin	-1.01***	0.15	[-1.30, -0.71]	-0.68	0.11	[-0.90, -0.47]
Stranger	-2.62***	0.16	[-2.93, -2.31]	-1.78	0.12	[-2.02, -1.54]

Notes. Unstandardized coefficients are reported. 10,000 bootstrap samples used for mediation analyses. ** $p < .01$, *** $p < .001$.

Figure 10

Theorized moderated mediation model in Study 2



Note. Unstandardized effects are shown. Dashed lines represent non-significant effects. ** $p < .01$, *** $p < .001$

Discussion

Study 2 broadly supported the theoretical model and predictions derived from evolutionary perspectives (e.g., Balliet et al., 2017). Compared to participants who imagined interacting with strangers, the effect of control on vulnerability to exploitation was attenuated when participants imagined interacting with a member of one's kin or ingroup. While the simple effects of control were significant across all three targets (kin, close nonkin, stranger), the effect of control on vulnerability was much stronger (over five times greater) for strangers than for kin and close nonkin targets. In turn, and consistent with our theoretical model, greater vulnerability led to greater cynicism. It is worth noting that the direct effect of control on cynicism was not (at best, only marginally) qualified by the target of one's interaction, though the simple effects emerged in the predicted directions. Thus, as in Study 1, the direct interaction effect on cynicism should be interpreted with caution.

While the use of group membership cues (i.e., kin, close nonkin, and strangers) as a manipulation of corresponding and conflicting interests makes evolutionary sense given their conceptual overlap (Balliet et al., 2017), they are nonetheless distinct constructs. For instance, there are various cases where one's kin afford significant conflicting interests (e.g., parent-offspring conflict; Trivers, 1974). Thus, it is a possibility that perceptions of group membership (independent of the effects of interests) were what drove the moderating effects here. The inability to cleanly distinguish both sets of effects is a methodological limitation that I address in Study 3.

Additionally, it is possible that the effect of control on cynicism was not robustly qualified by (corresponding vs. conflicting) interests in Studies 1 and 2 because the manipulation of high control inadvertently also induced higher levels of cynicism. Indeed, such reasoning may align with findings showing that individuals who possess high levels of control (and power) may perceive that others are only nice to them for instrumental reasons (e.g., when a subordinate engages in ingratiation to curry favor with a boss) (Inesi et al., 2012). Such an effect may account for the weaker interests × control effects on cynicism [6]. I tested such a possibility in Study 3.

[6] Such reasoning is also supported by the mediational analyses in studies 1 and 2, which show that control has a positive effect on cynicism (c' path) after accounting for the mediational effects. That is, after accounting for the effects of control on cynicism through vulnerability, greater control predicts greater cynicism.

Study 3: Vignette experiment 2 (promotion scenario)

Study 3 addressed two methodological limitations of the previous experiments while testing the theoretical model in a context common to daily life: vying for a promotion at work. While Study 2's manipulation of interests may have been confounded with a manipulation of group membership, Study 3 employed a cleaner manipulation of interests. Additionally, while the manipulation of high control (i.e., power) in Studies 1 and 2 may have attenuated the moderating effect of interests on the control-cynicism link, I employ an additional equal control condition here. Overall, Study 3 employed a 3 (control: *low*, *equal*, *high*) × 2 (interests: *conflicting*, *corresponding*) between-subjects design.

Method

Participants

Given funding considerations, I only recruited 450 participants; five were excluded for incomplete responses, leaving a final sample of 445 participants (M_{age} = 38.21 years, SD_{age} = 12.45; 221 males, 224 females; 52.4% with at least a bachelor's degree; 73.7% White). Sensitivity analyses revealed that the sample size could detect a minimum effect size of $\eta^2 = .021$ with power of .8.

Measures and procedure

A diagram of the study flow (Appendix G), the experimental manipulations (Appendix H), and questionnaires (Appendix I) can be found in the Appendices.

Experimental manipulation. Participants read about a situation in which they and a coworker named Robin were up for promotion. However, the

specific situation each participant read varied in the level of control and interests that was afforded. Participants were assigned to one of six conditions: high control, corresponding interests; equal control, corresponding interests, low control, corresponding interests; high control, conflicting interests; equal control, conflicting interests, low control, conflicting interests (Appendix H). For instance, participants assigned to the equal control, conflicting interests condition first read the following passage (portions that vary across conditions are in italics):

> You work at a large company that is about to decide on upcoming promotions soon. This year, the company is looking to promote ***two*** employees only. The company has declared that if it is unable to identify suitable candidates, then no one will be promoted. ***In other words, either two suitable employees are promoted, or no one is promoted.***
>
> **You** and a coworker, **Robin**, are among the employees under consideration for promotion. You have never met Robin (who is of the same gender and age as you but works in a different department) and learned that both of you have worked at the company for the same amount of time, have similar work performances, and are equally regarded in the company. **Both you and Robin would be happy to receive a promotion.** While a promotion comes with new responsibilities, it is also a recognition of your hard work, a progression of your careers, and comes with increased remuneration and benefits.
>
> While the other candidates have significantly weaker records, **both you and Robin are the only ones who clearly meet the criteria for promotion.** It is obvious to everyone (including yourselves) that you and Robin are frontrunners for promotion**.** *However, given the company's desire to either promote two good employees or no one at all,* ***it is likely that you will not be promoted if Robin isn't also identified for promotion (and vice versa). That is, in all likelihood, either both of you will be promoted, or neither will be promoted.***

Participants then read that as part of the promotion process that either: (a) they were selected to write an evaluation for themselves and their coworker (i.e., high control); (b) both the participant and the coworker would evaluate

themselves and the other (i.e., equal control); (c) the coworker would evaluate him/herself and the participant (i.e., low control). For instance, participants assigned to the equal control condition read the following passage:

> As part of the consideration process, assessments of each candidate's suitability for promotion are submitted. One person is randomly selected from within the company to make an assessment for each candidate; anyone (even the candidate themselves) may be randomly selected to provide the assessment. Sufficient relevant information (e.g., who this person is, what their performance is like, how others generally perceive them) will be given to the assessor to make an informed evaluation. This assessment is not the only factor that matters, but it will have some influence over any decisions to promote you (or not).
>
> The both of you learn that, by coincidence, ***you and Robin were selected to assess both your own <u>and</u> the other person's suitability for promotion***. In other words, you and Robin will each make two assessments: a self-assessment and an assessment of the other person. Both your assessments will be directly submitted to the promotion evaluation committee and need not be shared with the other person.

Manipulation check. As a manipulation check for interests, participants responded to two items adapted from Gerpott et al.'s (2018) measure of interests ("*Both Robin and I can attain our preferred outcomes*" and "*Our preferred outcomes in this situation are conflicting*") and one newly created item "*A good outcome for Robin entails a good outcome for me (and vice versa*") on a seven-point scale from *strongly disagree* to *strongly agree*. As the manipulation check items showed good reliability ($\alpha = .95$), I derived a composite score from the mean of all three items. I used the single item measure for control from Study 3.

Outcome variables. I used the same vulnerability ($\alpha = .93$) and cynicism ($\alpha = .87$) items as in Study 3.

Results and Discussion

Table 7 reports the descriptives and correlations for all variables, while Table 8 breaks down the descriptives for key outcomes by conditions.

Table 7

Descriptives and correlations for variables in Study 3

	M	*SD*	1	2	3	4	5	6	7	8	9	10
1. Control	-	-	-									
2. Interests	-	-	-.00	-								
3. Control (MC)	2.90	1.40	**.83**	-.02	-							
4. Interests (MC)	3.02	1.67	.01	**.87**	.05	(.95)						
5. Vulnerability	3.97	1.88	**-.42**	**-.47**	**-.46**	**-.48**	(93)					
6. Cynicism	3.74	1.24	**-.24**	**-.48**	**-.23**	**-.49**	**.73**	(.87)				
7. Sex	-	-	-.00	.01	-.02	-.01	-.04	-.03	-			
8. Age	38.22	4.97	.06	-.04	.06	-.05	-.06	**-.11**	**.10**	-		
9. Education	-	-	.01	.07	.02	.08	-.08	-.09	**-.13**	**.10**	-	
10. Ethnicity	-	-	.00	**.11**	-.01	.08	-.03	-.00	-.01	**-.21**	.04	-
11. SES	4.97	1.79	.05	.05	.09	.07	-.03	-.05	**-.11**	.00	**.39**	-.03

Notes. Correlations in bold are significant at $p < .05$ level. Diagonals report reliability in parentheses. Control was coded 0 = low, 1 = equal, and 2 = high. Interests was coded as 0 = conflicting, 1 = corresponding. Sex was coded as 0 = male, 1 = female. MC = manipulation check. SES = socioeconomic status

Table 8

Descriptives for key outcomes by conditions in Study 3

		Control						**Mean difference**		
		Low		**Equal**		**High**		**low minus equal**	**equal minus high**	**low minus high**
Outcome	**Interests**	***M***	***SE***	***M***	***SE***	***M***	***SE***			
vulnerability	conflicting	5.91^{a}	0.17	5.35^{a}	0.16	3.27^{a}	0.17	0.56^{*}	2.08^{***}	2.64^{***}
	corresponding	3.89^{b}	0.16	2.82^{b}	0.16	2.60^{b}	0.16	1.07^{***}	0.21	1.28^{***}
cynicism	conflicting	4.70^{a}	0.12	4.46^{a}	0.12	3.86^{a}	0.12	0.24	0.61^{**}	0.84^{***}
	corresponding	3.44^{b}	0.12	3.21^{b}	0.12	2.81^{b}	0.12	0.23	$0.41^{\dagger}$	0.64^{**}

Note. For each outcome, different subscripts within each column denote significant differences. $^{\dagger}p < .10$, $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$

Manipulation checks

An independent samples t-test indicated that the manipulation of interests was effective, $t\,(443) = -36.70$, $p < .001$, $d = 3.48$; situations with corresponding interests ($M = 4.45$, $SD = 0.85$) induced higher ratings of

corresponding interests with "Robin" than those situations with conflicting interests (M = 1.56, SD = 0.81). A one-way ANOVA indicated that the manipulation of control was effective, F (2, 442) = 552.00, p < .001, η_p^2 = .714; participants reported less control in the low control condition (M = 1.35, SE = 0.06) than in the equal control condition (M = 3.18, SE = 0.06) (p < .001), and less control in the equal control condition than the high control condition (M = 4.21, SE = 0.06), p < .001.

Does control interact with target to predict cynicism?

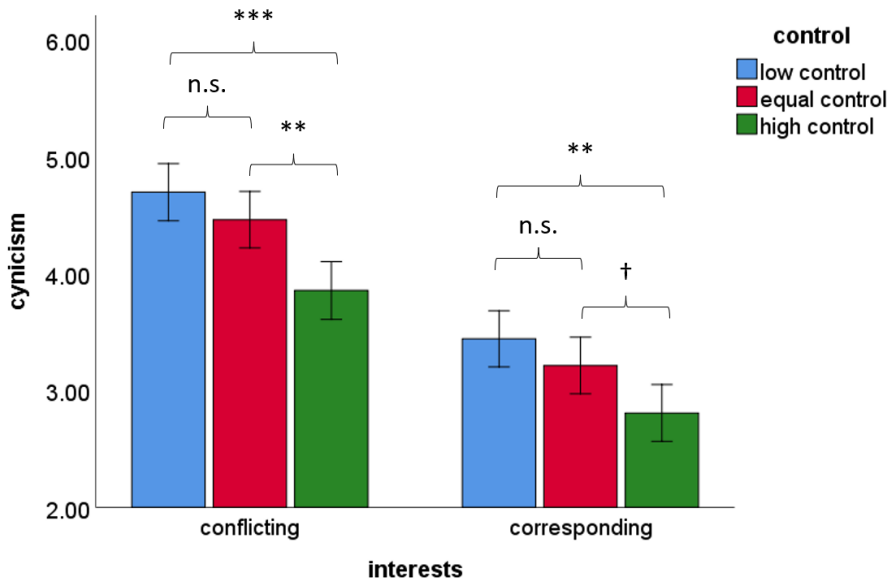
I ran a 3 × 2 GLM with control (coded as 0 = low, 1 = equal, and 2 = high) and interests (dummy coded as 0 = conflicting, 1 = corresponding) as predictors and cynicism as an outcome. A main effect of control emerged, F (2, 439) = 19.12, p < .001, η_p^2 = .080. Participants in the low control (M = 4.07, SE = 0.09) and equal control conditions (M = 3.84, SE = 0.09) did not differ significantly in their levels of cynicism, p = .168, but participants in both conditions reported greater cynicism than those in the high control condition (M = 3.33, SE = 0.09) (both ps < .001). Participants reported greater cynicism in situations with conflicting interests (M = 4.34, SE = 0.07) than in situations with corresponding interests (M = 3.15, SE = 0.07), F (1, 439) = 142.10, p < .001, η_p^2 = .245.

However, the control × interests interaction was not significant, F (2, 439) = 0.46, p = .631, η_p^2 = .002 (see Figure 11). Nonetheless, I analyzed the relevant simple effects. In situations with corresponding interests, experiencing low control (M = 3.44, SE = 0.12) did not lead to greater cynicism than when experiencing equal control (M = 3.21, SE = 0.12), p = .543; however, compared to when experiencing high control (M = 2.81, SE =

0.12), low control led to greater cynicism (p = .001), while equal control led to marginally greater cynicism, (p = .055). In situations with conflicting interests, experiencing low control (M = 4.70, SE = 0.12) also did not lead to higher levels of cynicism than when experiencing equal control (M = 4.46, SE = 0.12), p = .515; however, compared to when experiencing high control, experiencing low and equal control both led to greater cynicism (both ps < .003).

Figure 11

Interaction between control and interests on cynicism in Study 3



Note. Error bars reflect standard errors. $^{\dagger}p < .010$, $^{**}p < .01$, $^{***}p < .001$

Overall, these findings did not support the possibility that an overly strong manipulation of control in the high control condition was responsible for the lack of a direct moderating effect on cynicism. If true, then we should have expected significant differences between the low and equal control conditions when conflicting (but not corresponding) interests were high. Yet,

this was not the case: when interests were both conflicting and corresponding, participants in the low and equal control conditions reported similar levels of cynicism. Nonetheless, it is worth noting that, consistent with our reasoning, the effect of control on cynicism was greater when interests were conflicting (η_p^2 = .054) than corresponding (η_p^2 = .031).

Does control interact with target to predict vulnerability to exploitation?

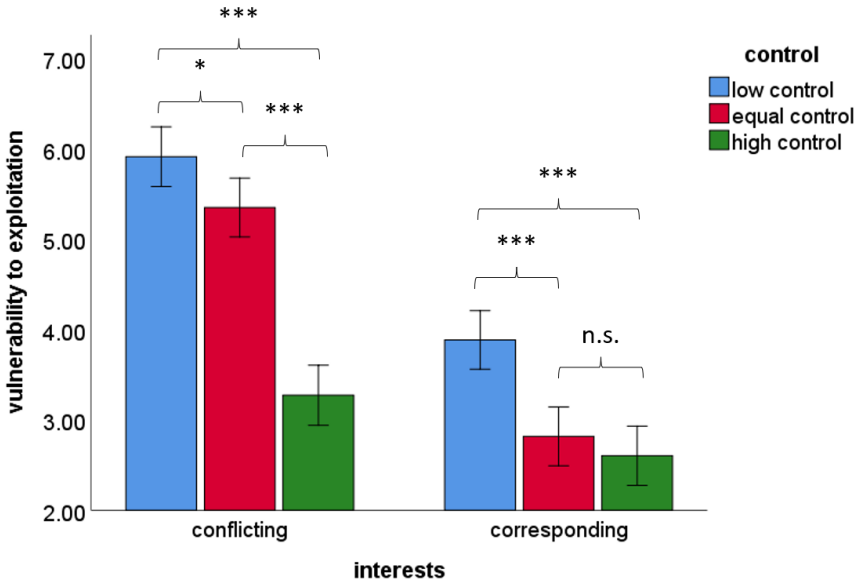
I repeated the analysis with vulnerability to exploitation as the outcome. A main effect of control emerged, F (2, 439) = 71.86, p < .001, η_p^2 = .247. Compared to the low control condition (M = 4.90, SE = 0.12), participants in the equal control condition (M = 4.08, SE = 0.12) reported greater vulnerability, p < .001; in turn, those in the equal control condition reported greater vulnerability than those in the high control condition (M = 2.94, SE = 0.12), p < 001. A main effect of interests also emerged, F (1, 439) = 169.88, p < .001, η_p^2 = .279; situations with conflicting interests (M = 4.85, SE = 0.10) induced greater cynicism than situations with corresponding interests (M = 3.10, SE = 0.09).

A significant control × target interaction emerged, F (2, 439) = 17.21, p < .001, η_p^2 = .073 (see Figure 12). In situations with corresponding interests, low control (M = 3.89, SE = 0.16) led to greater vulnerability than equal control (M = 2.82, SE = 0.16), p < .001; however, experiencing equal and high (M = 2.60, SE = 0.16) control made no difference to participants' vulnerability, p = 1.000. In contrast, in situations with conflicting interests, low control (M = 5.91, SE = 0.17) led to greater vulnerability than equal control (M = 5.35, SE = 0.16), p = .047; in turn, both low and equal control led to greater vulnerability than in the high control condition (M = 3.27, SE =

0.17) (both *p*s < .001). Consistent with Studies 1 and 2 and my hypothesizing, the simple effect of control was on vulnerability was substantially greater when interests were conflicting (η_p^2 = .243) than corresponding (η_p^2 = .075).

Figure 12

Interaction between control and interests on vulnerability to exploitation in Study 3



Note. Error bars reflect standard errors. * $p < .05$, *** $p < .001$

Does the theorized moderated mediation model hold?

Table 9 reports the regression coefficients and 95% confidence intervals from the analyses here and Figure 13 displays the findings graphically. I entered control (coded 0 = low, 1 = equal, and 2 = high) as a predictor, interests (0 = conflicting, 1 = corresponding) as a moderator, vulnerability to exploitation as a mediator, and cynicism as an outcome (i.e., SPSS macro PROCESS model 7).

Table 9

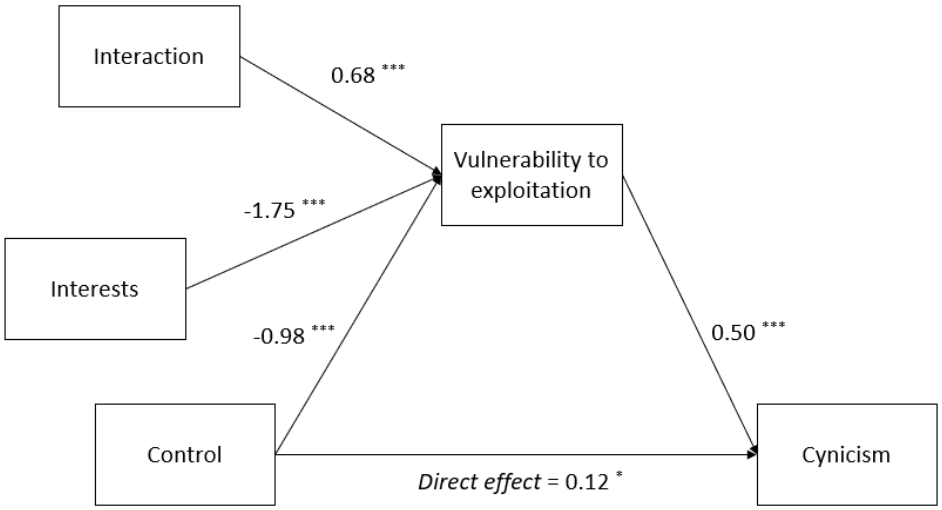
Moderated mediation results for Study 3

	Model 1 DV: vulnerability			Model 2 DV: cynicism		
Predictors	***B***	***SE***	**95% CI**	***B***	***SE***	**95% CI**
Constant	3.97***	0.07	[3.84, 4.11]	1.76 ***	0.10	[1.56, 1.96]
Control	-0.98***	0.08	[-1.14, -0.81]	0.12*	0.05	[0.01, 0.23]
Interests	-1.75***	0.14	[-2.02, -1.49]			
Control × Interests	0.68**	0.17	[0.35, 1.00]			
Vulnerability				0.50***	0.02	[0.45, 0.55]
R^2	.42			.53		
F	105.6			250.0		
Indirect effect				-0.49	0.05	[-0.59, -0.38]
Conditional effects of	**control → vulnerability**			**control → vulnerability → cyn.**		
Conflicting interests	-1.32***	0.12	[-1.55, -1.08]	-0.66	0.06	[-0.79, -0.53]
Corresponding interests	-0.64***	0.12	[-0.87, -0.41]	-0.32	0.06	[-0.45, -0.20]

Notes. Unstandardized coefficients are reported. 10,000 bootstrap samples used for mediation analyses. ** $p < .01$, *** $p < .001$.

Figure 13

Theorized moderated mediation model in Study 3



Note. Unstandardized effects are shown. Dashed lines represent non-significant effects. * $p < .05$, *** $p < .001$

As described above, a significant interaction between the predictor (control) and moderator (interests) on the mediator emerged, $B = 0.68$, $SE = 0.17$, $t(441) = 4.03$, $p < .001$, 95% CI [0.35, 1.00] (Model 1). Furthermore, the

mediator (vulnerability) positively predicted cynicism, $B = 0.50$, $SE = 0.02$, $t(442) = 21.10$, $p < .001$, 95% CI [0.45, 0.55] (Model 2). Consistent with Studies 1 and 2, the bootstrapped index of moderated mediation was significant, $B = 0.34$, $SE = 0.08$, 95% CI [0.17, 0.50], providing support for the theoretical model. The conditional indirect effects revealed that vulnerability to exploitation mediated the link between control and cynicism when interests were corresponding, $B = -0.32$, $SE = 0.06$, 95% CI [-0.45, -0.20], and this effect was enhanced when interests were conflicting, $B = -0.66$, $SE = 0.06$, 95% CI [-0.79, -0.53].

Integrative data analysis: affirming the effect of control and interests on cynicism

Broadly, results across Studies 1, 2, 3 supported the theoretical model: corresponding (vs. conflicting) interests moderated the effect of control on cynicism through perceptions of vulnerability to exploitation. However, notwithstanding these consistent findings, we found little evidence that interests moderated the direct effect of control on cynicism. Indeed, the moderating role of interests (on the path from control to cynicism) was marginal in Studies 1 and 2, and non-significant in Study 3.

I discuss potential theoretical explanations for the lack of findings (i.e., small effects, suppressors, insensitive measures) in the **General discussion**. Here, I employ a statistical approach to consider one such explanation: that the true size of the Control × Interests interaction may have been too small to be detected in the preceding studies. In particular, I employed integrative data analysis (IDA)—a technique that integrates datasets of various studies to

examine the effect of interest—to ascertain the significance of the Control × Interests interaction across Studies 1, 2, and 3 (Curran & Hussong, 2009).

It is worth noting that other techniques for synthesizing findings across studies also exist. For instance, one popular approach is to conduct an internal meta-analysis (or a mini-meta), which synthesizes summary statistics (i.e., correlations, Cohen's *d*) across studies to identify a more precise estimate of the effect of interest. In contrast to such approaches, IDA directly tests for the effect of interest (e.g., an interaction) after integrating all available and comparable datasets. Such an approach is particularly helpful when original datasets are available—as is the case here—and significantly boosts the statistical power available for detecting even small effects (Curran & Hussong, 2009).

However, IDA (and other meta-analytic techniques) is most appropriate when studies that are being combined include the same variables (both independent and dependent) and have the same design (e.g., 2 [control: high, low] x 2 [interests: conflicting, corresponding]). As seen from Table 10, while the variables manipulated across studies were conceptually highly related, they were not all operationalized with the same number of levels. Accordingly, to facilitate IDA, I dropped the close nonkin variable from Study 2 and the equal control condition from Study 3. In other words, I elected to only test the control (high, low) × interests (conflicting, corresponding) interaction term in this IDA.

Table 10

Operationalization of independent variables in Studies 1, 2, and 3

	Operationalization of	
Study	Control	Interests
1	2-level: **high**, **low**	2-level: **conflicting**, **corresponding**
2	2-level: **high**, **low**	3-level: **kin**, close nonkin, **stranger**
3	3-level: **high**, equal, **low**	2-level: **conflicting**, **corresponding**

Note. Only conditions in bold were kept for IDA.

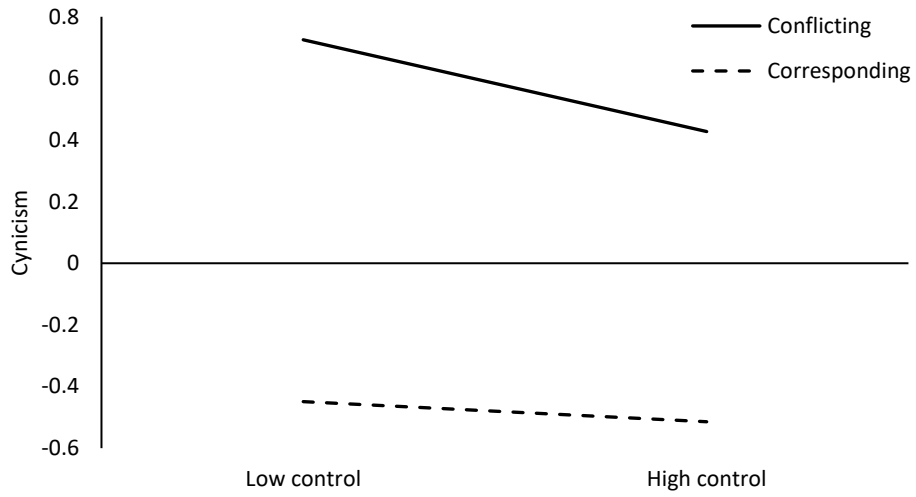
To perform IDA, I first standardized the coding of the control and interests variables. Low control was coded as 0 while high control was coded as 1; conflicting interests was coded as 0 while corresponding interests were coded as 1. Then, cynicism scores were standardized within each study. Thereafter, each study was given an identifier (Study 1 coded as 1, Study 2 coded as 2, Study 3 coded as 3). Finally, data from all three studies were combined into one single dataset.

To test the significance of the Control × Interests interaction, I included control, interests and their interaction term as predictors and cynicism as an outcome in a multilevel model, which allowed me to account for the nested nature of the data (i.e., individuals were nested in studies). Analyses revealed significant main effects of control (B = -0.30, SE = 0.06, t (1736) = -5.06, $p < .001$) and interests (B = -1.17, SE = 0.06, t (1736) = -20.00, $p < .001$). In line with my expectations, a significant Control × Interests interaction emerged, B = 0.23, SE = 0.08, t (1736) = 2.79, p = .005. Simple slopes analyses revealed that control negatively predicted cynicism when interests were conflicting, B = -0.30, SE = 0.06, $p < .001$; however, control had no influence on cynicism when interests were corresponding, B = -0.07, SE = 0.06, p = .250 (see Figure 14). Overall, the findings of IDA further affirmed

the conceptual reasoning outlined in the current dissertation, and suggests that the key interaction, while significant may have been too small to detect in each study.

Figure 14

Interaction between control and interests on cynicism after integrating datasets from Studies 1, 2, and 3



Study 4: Cross-cultural correlational study (European Values Survey)

Study 4 sought to ascertain the generalizability of the theoretical model by examining its validity on a sample that varied more broadly in terms of culture and demographics. More specifically, using the European Values Survey, I sought to demonstrate variability in the link between personal control and cynicism and identify naturally occurring correlates of corresponding (vs. conflicting) interests that modulate this link. I investigated historical pathogen prevalence and collectivism as proxies for corresponding (vs. conflicting) interests.

Stemming the spread of pathogenic diseases has posed a significant adaptive problem for ancestral humans. From an evolutionary perspective, both human and cultural evolution should have shaped individual- and cultural-level adaptations to solve such a problem (Fincher et al., 2008; Schaller, 2015; Sng et al., 2018). In environments where pathogens were highly prevalent, cultural-level adaptations that emerged may include the proliferation of infection-preventing cultural norms (e.g., rules against defecating in water sources; use of certain spices in food preparation) and sanctions against norm violators (Schaller, 2015; Yong & Choy, 2021). At the individual level, such adaptations may include a strong inclination towards conformity (Murray et al., 2011). That is, in societies where pathogens were historically more (vs. less) prevalent, normative behaviors and social rules that contribute to the collective interest of stemming its spread were likely to emerge.

Relatedly, the propagation of collectivistic (vs. individualistic) values within a society (Fincher et al., 2008) represents another cultural adaptation

for dealing with high pathogen levels. More than individualistic values, collectivistic values emphasize the importance of the group's (vs. individual's) interests and conformity to the ingroup's normative behaviors and rules (vs. self-expression or deviance from the norm) (Fincher et al., 2008; Hofstede et al., 2020; Reis, 2008; Triandis & Gelfand, 2012). Relative to individualistic values, collectivistic values also promote a view of others' interests as complementary (vs. conflicting) with one's own (Gelfand & Christakopoulou, 1999), and norms for cooperative (vs. competitive) behaviors (Chen et al., 1998; Gelfand & Realo, 1999; Marcus & Le, 2013).

Broadly, such reasoning suggests that both historical pathogen prevalence and collectivism represent facilitated adaptations—including individual inclinations, normative behaviors, and social rules—that emphasize conformity, coordination, and cooperation. In turn, such adaptations would have contributed to the pursuit of collectively desired goals (e.g., disease prevention) [7]. Thus, historical pathogen prevalence and collectivism may be indicative of higher levels of corresponding (vs. conflicting) interests in a society, with higher (vs. lower) levels of pathogen prevalence or collectivism affording more social situations marked by corresponding (vs. conflicting) interests. Accordingly, the relationship between control and cynicism should

[7] While the current analysis focuses on collectivists' cooperative behaviors towards their ingroup, they are not devoid of uncooperative and competitive behavior, which tend to manifest against the *outgroup* (e.g., Yamagishi & Yamagishi, 1994). Nonetheless, more than individualism, collectivism seems to promote cooperation (Marcus & Le, 2013).

Additionally, individuals in collectivistic societies can also have goals and interests that conflict with those of their group, even if they prioritize their group's goals and interests (Qin et al., 2022). This is an interesting extension of the current research. Extant reasoning on this matter suggests that collectivists may perform worse than individualists when their individual goals are at odds with their collective goals; as a corollary, the stronger conflict that collectivists may perceive may lead to a strengthening of the control-cynicism link. While the findings in the current study do not support such reasoning, future research can more rigorously evaluate the merits of such reasoning.

weaken in societies with higher levels of historical pathogen prevalence or collectivism [8].

Method

Participants

I employed the European Values Survey (EVS), a representative dataset surveying individuals from over 40 European nations. Between 1981 and 2017, five waves of respondents were surveyed on their beliefs and attitudes regarding various issues. I used data from Wave 4 (collected between 2008 and 2009) as cynicism was measured in this wave only. For this same reason, I did not include data from the World Values Survey (WVS), an even larger dataset comprising respondents from even more countries. Indeed, the WVS is ill-suited for my purposes: the only item related to cynicism—Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?—was measured on a dichotomous scale and, on its own, is more appropriately conceptualized as a measure of generalized trust (e.g., van Hoorn, 2015).

In the current analyses, sample size depended on the availability of data for different countries, with models including many covariates having smaller samples. For analyses conducted at the individual level (i.e., multilevel models), sample sizes varied from $N = 33{,}569$ (across 27 countries) to 64551 (across 46 countries). For analyses conducted at the societal level, sample

[8] At the dissertation proposal, MVV suggested an alternative theoretical model where pathogen prevalence (or other variables tracking harshness/unpredictability) may lead to cynicism through a decrease in control (i.e., a mediational model). Such a conceptualization has previously received support (e.g., Mittal and Griskevicius, 2014); accordingly, I explored this alternative in the supplementary materials (*S4: tests of alternative theoretical models in study 4*), but found little support for it. Similarly, KT also suggested an alternative theoretical model where individualism mediated the link between historical pathogen prevalence and control. I discuss this in *S4* as well.

sizes varied from $N = 36$ to 42.

Measures

Cynicism. Cynicism was measured with three statements: "Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people"; "Do you think that most people would try to take advantage of you if they got the chance, or would they try to be fair?"; "Would you say that most of the time people try to be helpful or that they are mostly looking out for themselves?". The first item was answered dichotomously (1 = *most people can be trusted*, 2 = *can't be too careful*); the other two were answered on a 10-point scale (1 = *most people would try to be fair/people mostly try to be helpful*, 10 = *most people would try to take advantage of me/people mostly look out for themselves*). Items were recoded such that higher scores reflected greater cynicism and were standardized across all respondents (i.e., a person's score reflected the deviation from the world average), before an average score of the three items was created for each respondent ($\alpha = .69$). Descriptive statistics for cynicism (and other key variables) are reported in Table 11.

Table 11

Statistics and descriptives of key variables in study 4

Country	Control-Cyn. *r*	*N*	Mean age	% Female	Mean cynicism	Mean control	Ind.	Hist. path. Prev.
Albania	-.08**	1429	40.89	50.52	0.44	6.00	20	0.03
Austria	-.26***	1492	46.33	56.56	-0.17	6.96	55	-0.65
Armenia	-.17***	1461	44.02	57.07	0.26	6.50	22	0.15
Belgium	-.25***	1506	47.99	51.76	-0.16	6.33	75	
Bosnia Herz.	-.10***	1458	42.08	54.76	0.18	6.82	22	0.03
Bulgaria	-.16***	1409	50.21	57.87	0.34	5.96	30	-0.10
Belarus	-.11***	1463	42.36	59.33	-0.05	6.13	25	-0.78
Croatia	-.12***	1492	45.13	60.20	0.20	7.07	33	-0.38
Cyprus	-.09**	992	49.90	55.60	0.47	7.65		-0.25
Northern Cyprus	-.19***	483	37.88	45.80	0.53	6.17		
Czech Republic	-.33***	1798	48.31	54.64	0.06	6.63	58	-0.78
Denmark	-.18***	1495	49.79	50.43	-0.88	7.69	74	-0.91
Estonia	-.26***	1485	50.11	64.70	-0.14	6.47	60	-0.78
Finland	-.35***	1098	46.89	50.88	-0.46	7.57	63	-0.78
France	-.19***	1494	50.04	54.50	-0.11	6.28	71	-0.40
Georgia	.04	1445	45.55	62.87	0.07	5.86	41	0.16
Germany	-.25***	2044	49.73	52.29	-0.19	6.62	67	-0.78
Greece	-.07*	1487	49.6	56.67	0.42	6.80	35	0.29
Hungary	-.17***	1506	44.64	52.21	0.13	6.48	80	-0.78
Iceland	-.19***	802	45.02	50.20	-0.63	7.94	60	-1.18
Ireland	-.34***	993	45.70	59.72	-0.37	7.22	70	
Italy	-.27***	1462	47.89	51.88	0.06	5.66	76	0.40
Latvia	-.18***	1478	46.77	63.01	-0.06	6.20	70	-0.78
Lithuania	-.13***	1429	46.66	54.47	0.18	6.96	60	-0.78
Luxembourg	-.18***	1584	39.53	50.62	-0.15	6.90	60	
Malta	-.24***	1457	52.17	62.40	0.02	7.48	59	
Moldova	-.13***	1512	45.32	54.35	0.35	6.90	27	
Montenegro	-.14***	1463	42.67	55.67	0.17	7.79	24	
Netherlands	-.20***	1545	54.80	54.90	-0.56	6.51	80	-0.78
Norway	-.27***	1086	45.84	48.57	-0.76	7.57	69	-0.91
Poland	-.28***	1472	44.56	55.76	0.05	6.62	60	-0.78
Portugal	-.16***	1516	52.96	59.56	0.26	6.21	27	0.63
Romania	-.11***	1446	48.06	56.28	0.32	7.20	30	-0.37
Russian Fed.	-.10***	1427	46.02	66.62	-0.22	6.52	39	-0.64
Serbia	-.12***	1478	45.97	53.57	0.28	6.94	25	-0.11
Slovak Republic	-.13***	1448	53.60	59.91	0.24	6.75	52	-0.78
Slovenia	-.20***	1357	48.53	54.03	0.02	7.30	27	-0.78
Spain	-.11***	1444	47.85	56.13	-0.10	6.84	51	0.13
Sweden	-.29***	1138	48.95	53.01	-0.58	7.69	71	-0.91
Switzerland	-.28***	1254	49.81	53.89	-0.49	7.09	68	-1.05
Turkey	-.20***	2310	40.58	55.62	0.42	6.34	37	0.40
Ukraine	-.09**	1423	47.98	62.04	-0.07	6.04	25	-0.64
Macedonia	-.23***	1426	43.78	43.53	0.29	7.27	22	0.03
Great Britain	-.21***	1549	52.07	57.53	-0.35	7.11		-0.98
Northern Ireland	-.12***	491	50.56	60.40	-0.28	7.39		
Kosovo	-.37**	1524	37.62	49.72	0.27	6.56		

*Note*s. Control-Cyn. *r* = control-cynicism correlation; Ind. = individualism; Hist. Path. Prev. = historical pathogen prevalence; ** $p < .01$ *** $p < .001$

Personal control. Personal control was measured with a single item, "Some people feel they have completely free choice and control over their lives, and other people feel that what they do has no real effect on what happens to them. Please use the scale to indicate how much freedom of choice and control you feel you have over the way your life turns out?" on a 10-point scale from *none at all* to *a great deal*.

Moderators. I employed Murray & Schaller's (2010) index of historical pathogen prevalence, which tracked the historical prevalence of nine diseases in each society: leishmanias, schistosomes, trypanosomes, leprosy, malaria, typhus, filariae, dengue, and tuberculosis. National-level individualism-collectivism scores were from Hofstede Insights (https://www.hofstede-insights.com/country-comparison/). Both variables correlated at $r = -.58$, $p < .001$ (i.e., more individualistic countries had lower historical levels of pathogens).

Covariates. I included previously demonstrated correlates of cynicism as covariates. At the individual level, these included sex (Leung, Li, & Zhou, 2012), age and education (Stavrova & Ehlebracht, 2018a), monthly household income per capita (Stavrova & Ehlebracht, 2016), and perceived health (Stavrova & Ehlebracht, 2019). At the societal level, these included gross domestic production (GDP) per capita (log-transformed; Gelfand et al., 2011), urban population as a percentage of total population, homicide rates (per 100,000 people), and an index of rule of law (Hofstede et al., 2010; Stavrova & Ehlebracht, 2016); the first three variables were extracted from World Bank Open Data (matched to each country's year of data collection in the EVS) while the latter was extracted from the 2022 ratings from the World Justice

project (https://worldjusticeproject.org/rule-of-law-index/global/2022/ranking).

Results

Effect of control on cynicism: replicating previous studies

First, I examined the effect of control on cynicism. As control and cynicism scores were nested within nations, I employed multilevel modeling. For multilevel analyses, individual-level (level 1) predictors were group mean-centered and societal-level (level 2) predictors were standardized. Indeed, personal control negatively predicted cynicism, B = -0.048, SE = 0.002, t (33543) = -28.09, $p < .001$ (see Table 12, Model 2; see Model 1 without covariates).

Variability in the control-cynicism link: pathogen prevalence as a moderator

Next, I examined the moderating role of historical pathogen prevalence on the control-cynicism link. It is worth noting that control was negatively correlated with cynicism in all countries (for all rs, all ps < .009; Table 1) except Georgia, where the relationship was null. These correlations varied in strength; they were strongest in Kosovo (r = -.37, $p < .001$) and weakest in Georgia (r = .04, p = .187). I ran a societal-level correlation analysis between these control-cynicism correlation values (i.e., pearson r values) and historical pathogen prevalence scores. Consistent with my hypothesis, pathogen prevalence was positively correlated with control-cynicism r values, r = .42, p = .009; as historical pathogen levels increased, the relationship between control and cynicism in a country weakened (i.e., tended to zero; see top of Figure 15).

Table 12

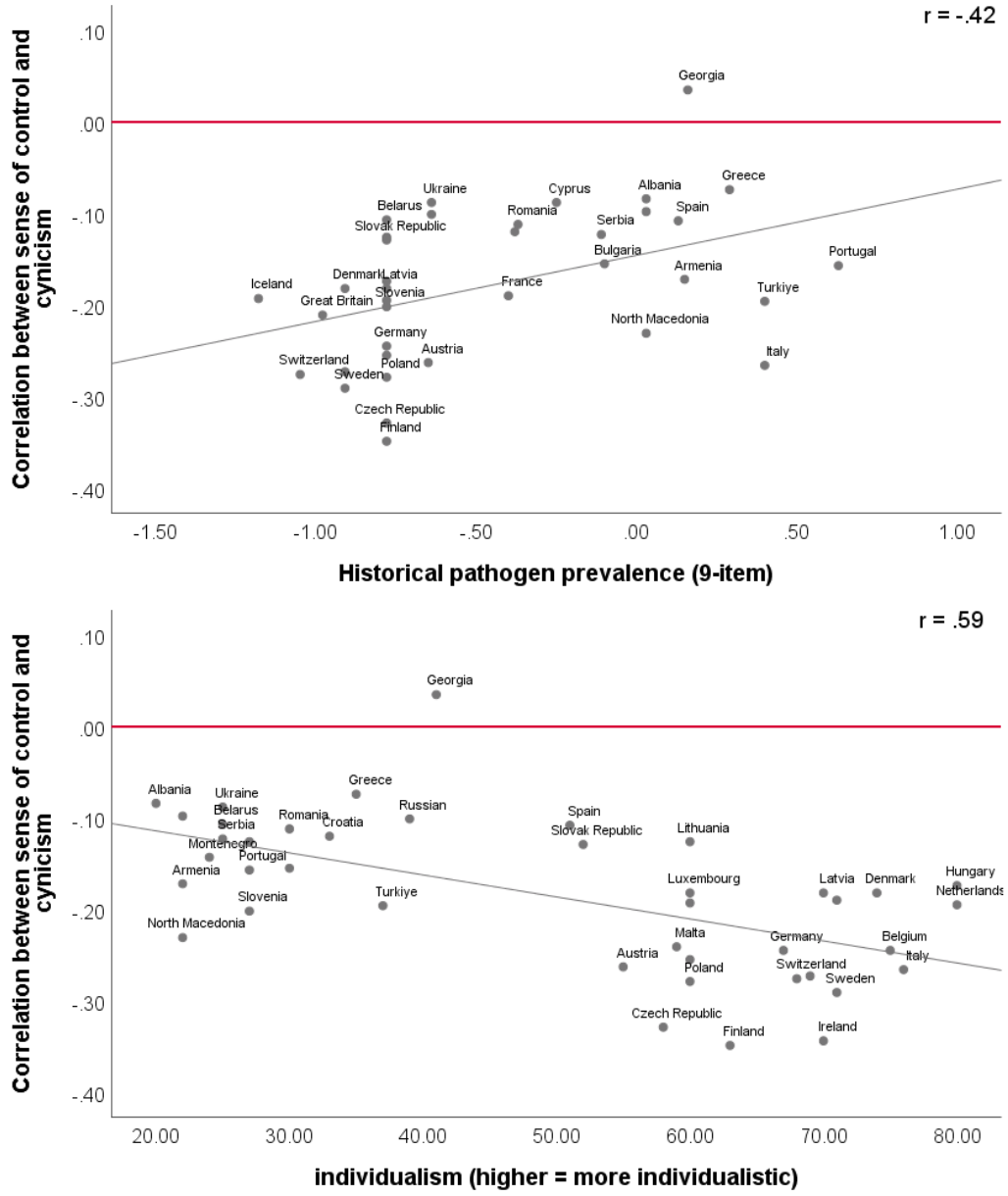
Multilevel modeling regression results in study 4

Predictors	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
Key predictors	***B***	***SE***	***B***	***SE***	***B***	***SE***	***B***	***SE***	***B***	***SE***	***B***	***SE***
Intercept	-0.017	0.051	-0.077	0.033	-0.032	0.044	-0.077	0.033	-0.035	0.040	-0.077	0.033
Personal control	**-0.057**	0.001	**-0.048**	0.002	**-0.058**	0.001	**-0.053**	0.002	**-0.059**	0.001	**-0.052**	0.002
Historical pathogen prevalence					**0.244**	0.044	0.088	0.045				
Control x Historical pathogen prevalence.					**0.014**	0.001	**0.018**	0.002				
Individualism									**-0.227**	0.040	-0.008	0.054
Control x Individualism									**-0.017**	0.001	**-0.019**	0.002
Covariates												
Sex			**0.065**	0.008			**0.064**	0.008			**0.064**	0.008
Age			**-0.004**	0.000			**-0.004**	0.000			**-0.004**	0.000
Education			**-0.029**	0.002			**-0.029**	0.002			**-0.029**	0.002
Monthly household per capita			**-0.019**	0.003			**-0.019**	0.003			**-0.018**	0.003
Perceived health			**-0.075**	0.005			**-0.074**	0.005			**-0.075**	0.005
Homicide rates			-0.087	0.042			-0.088	0.042			-0.087	0.042
Rule of law			-0.180	0.067			-0.180	0.067			-0.180	0.067
Individualism			-0.009	0.055			-0.009	0.055				
Historical pathogen prevalence			0.088	0.045							0.088	0.045
GDP per capita			-0.033	0.076			-0.034	0.075			-0.033	0.075
Urban population			-0.074	0.056			-0.073	0.056			-0.074	0.056
N	64551		33569		53538		33569		59512		33569	

Note. Ind.-col. = Individualism-collectivism (higher scores reflect individualism); Mthly. hh. inc. pc = monthly household income per capita. Coefficients in bold are significant at $p < .001$

Figure 15

Correlation between control-cynicism correlations with pathogen prevalence (top) and collectivism (bottom)



To formally test the moderating role of pathogen prevalence, I conducted multilevel analyses. Support for the prediction required a significant control × pathogen prevalence interaction term and, specifically, a weakening of the control-cynicism relationship at higher levels of pathogen prevalence. The full model included personal control, pathogen prevalence,

and their interaction term as predictors, and all control variables. Results reported in text are from the full model, but findings here and in all other multilevel analyses were consistent even without covariates. As predicted, historical pathogen prevalence moderated the control-cynicism link, B = 0.018, SE = 0.002, t (33543) = 9.83, $p < .001$ (Model 4; see Model 3 without covariates). Although control negatively predicted cynicism across all levels of historical pathogen prevalence. However, the simple effect of control was relatively stronger at lower levels of pathogen prevalence (i.e., which afforded more situations with conflicting interests), B = -0.07, SE = 0.00, $p < .001$, than at higher levels of historical pathogen prevalence (i.e., which afforded more situations with corresponding interests), B = -0.03, SE = 0.00, $p < .001$ (see top of Figure 16) [9].

Variability in the control-cynicism link: individualism-collectivism as a moderator

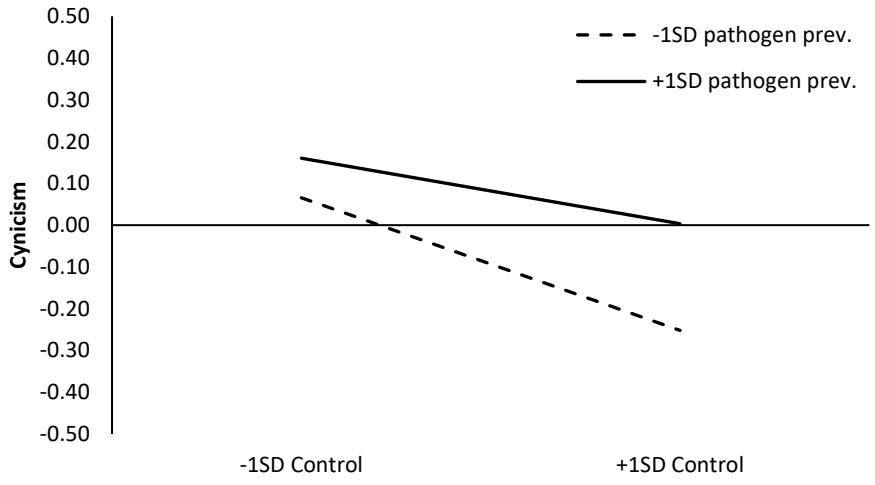
Next, I reran the analysis with individualism-collectivism as the moderator. Consistent with my predictions, individualism-collectivism was negatively correlated with control-cynicism r values, r = -.59, $p < .001$; as collectivism increased (and individualism decreased), the relationship between personal control and cynicism in a country weakened (see bottom of Figure 15). Multilevel analyses confirmed that individualism-collectivism moderated the effect of control on cynicism, B = -0.019, SE = 0.002, t (33543) = -10.52, p

[9] At the dissertation proposal, KE noted what seemed like a main effect of historical pathogen prevalence on cynicism. Indeed, others have argued that pathogen prevalence can promote a wariness about others (Schaller & Murray, 2008; Sng et al., 2018). To test this idea, I regressed cynicism on pathogen prevalence in a multilevel model (with and without the covariates used in the main analyses). Historical pathogen prevalence positively predicted cynicism without covariates, B = 0.24, SE = 0.04, $p < .001$, but only marginally so with covariates, B = 0.09, SE = 0.05, p = .066. Given the large sample size, this effect may not be robust, and it is more prudent to conclude that historical pathogen prevalence may not have a main effect on cynicism.

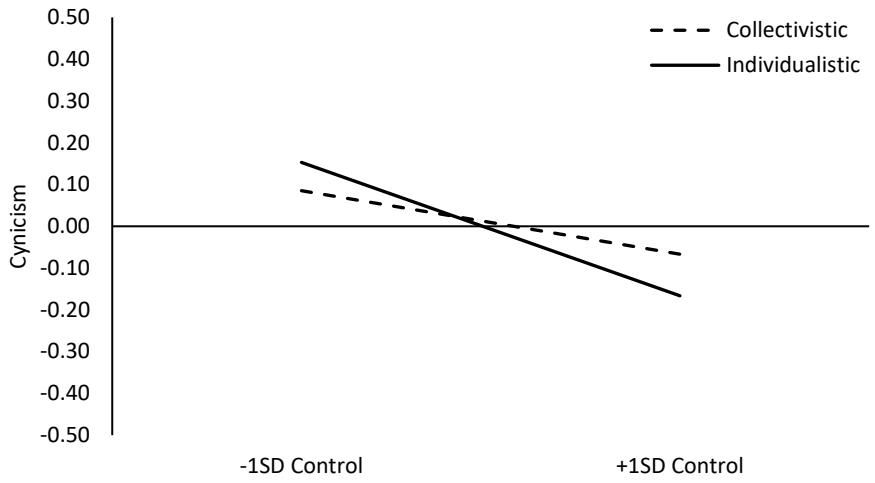
< .001 (Model 6; see Model 5 without covariates). Although control negatively predicted cynicism across all levels of collectivism, the simple effect of control was relatively stronger for more individualistic societies (i.e., which afforded more situations with conflicting interests), B = -0.07, SE = 0.00, p < .001, than for more collectivistic societies (i.e., which afforded more situations with corresponding interests), B = -0.03, SE = 0.00, p < .001 (see bottom of Figure 16) [10].

Figure 16

Interaction plots between control and historical pathogen prevalence (top), individualism-collectivism (bottom)



[10] To provide convergent validity, also I tested conceptually related variables (GDP per capita and urban population) as moderators. These findings are reported in *S5: analyses with alternative moderators for study 4*



Discussion

Study 4 replicated previous findings demonstrating a negative effect of personal control on cynicism (Stavrova & Ehlebracht, 2018a, 2019) and provided novel evidence for variability in this relationship. More importantly, and consistent with Studies 1 to 3, I found evidence for the role of corresponding (vs. conflicting) interests in accounting for variability in the control-cynicism link. Societal-level variables including historical pathogen prevalence and individualism/collectivism—that I theorized should track the level of corresponding interests afforded in daily life—moderated the control-cynicism link: the negative relationship between personal ontrol and cynicism weakened in societies with historically high (vs. low) levels of pathogens and in more collectivistic (vs. individualistic) societies. Nonetheless, these findings should not be interpreted as definitive support for the proposed theory due to two important limitations. First, the cross-sectional nature of this study prevents causal interpretations. Second, while I reasoned that these moderators can be viewed to track levels of corresponding or conflicting interests in an

environment they are, ultimately, not clean measures of this variable of interest (an issue I return to in the **General Discussion**).

General Discussion

While recent findings suggest a strong negative link between control and cynicism (Stavrova & Ehlebracht, 2018a, 2019), the present research sought to demonstrate that this is not invariably so. I argued that whether a lack of control fosters cynical beliefs should depend on the degree to which conflicting or corresponding interests are present and evidence across four studies supported such reasoning. Compared to situations with conflicting interests, situations with corresponding interests attenuated the negative effect of control on people's perceptions of vulnerability to exploitation, which, in turn, positively predicted cynical beliefs. The theoretical model was tested in different contexts and methods in four well-powered studies. Throughout, I sought to document an interaction between control and interests on cynicism (the proposed outcome variable) and/or vulnerability to exploitation (the proposed mediator) and also tested the full theoretical model statistically. Table 13 describes the results of these tests.

Table 13

Summary of findings

Outcome	Effect of	Study 1 Experiment *Economic games*	Study 2 Experiment *Raffle*	Study 3 Experiment *Promotion*	Study 4 Correlational *EVS*
Vulnerability to exploitation	Control	Y	Y	Y	-
	Interests	Y	Y	Y	-
	Interaction	Y	Y	Y	-
Cynicism	Control	N	Y	Y	Y
	Interests	Y	Y	Y	N
	Interaction	Y (marginal)	Y (marginal)	N	Y
Full moderated mediation model		-	Y	Y	Y

Notes. Y = yes, N = no. Effects that were not tested in a study represented by a dash

Study 1 manipulated one's level of control and type of interests by varying the payoffs in economic games. Drawing on evolutionary perspectives (Ackerman et al., 2007; Ackerman & Kenrick, 2008; Balliet et al., 2017), Study 2 conceptualized conflicting (vs. corresponding) interests as a property of different interaction partners: one's kin (one's genetic relatives) and close nonkin (e.g., friends) were argued to afford more interactions with corresponding interests than strangers, who afforded more interactions with conflicting interests. Study 2 employed a visualization task to test this reasoning, and described a scenario in which participants entered a raffle draw. In another visualization task describing coworkers vying for promotion, Study 3 tried to address the methodological limitations of the preceding experiments. The experiments consistently demonstrated the moderating role of interests, with the control-cynicism link weakening in situations with corresponding (vs. conflicting) interests. This interaction consistently operated on cynicism through its effects on vulnerability to exploitation, the proposed mediator. Study 4 further affirmed the generalizability of the theoretical model: using a large cross-cultural dataset ($N > 30{,}000$), Study 4 demonstrated the existence of substantial variability in control-cynicism and showed that this link weakened in societies that afforded social interactions characterized by higher levels of corresponding (vs. conflicting) interests (i.e., societies with historically higher [vs. lower] levels of pathogens or that were collectivistic [vs. individualistic]). These findings held even after accounting for various known correlates of cynicism (e.g., sex, self-reported health, income) and confounding variables (e.g., GDP per capita, urban population).

Theoretical implications

The present findings extend those first shown by Stavrova and Ehlebracht (2018a, 2019). In particular, I showed that the negative relationship between control and cynicism was more variable than previously surmised. In line with my reasoning, I consistently found that the negative impact of control on cynicism could be attenuated when interests were more corresponding (vs. conflicting). This variability in the link between control and cynicism was not just an artifact of the experimental manipulations; indeed, Study 4 documented substantial naturally occurring variability in the control-cynicism link across countries, even if they were negative in all but one country (where it was non-significant). Critically, even in this correlational dataset—which was larger, more representative, and more cross-cultural than the one employed by Stavrova and Ehlebracht—we found that the link between control and cynicism was weaker in situations affording more corresponding (vs. conflicting) interests. Thus, the present research contributes a more nuanced view of the relationship between control and cynicism that emphasizes the influence of moderator variables.

The present findings also elucidate the mechanisms through which a lack of control fosters cynical beliefs. While it has been proposed that perceptions of vulnerability to exploitation may mediate the effect of control on cynicism (Stavrova & Ehlebracht, 2018a, 2019), evidence for this claim has been absent thus far. Beyond affirming past theorizing, the present research leveraged on an interdependence perspective (Kelley & Thibaut, 1976) to demonstrate how the emergence of cynicism can be stemmed. Specifically, even when individuals perceive themselves to have a lack of (vs. high) control, highlighting the presence of corresponding interests between themselves and

others can tamper increases in one's perception of vulnerability to exploitation and, consequently, cynicism.

More fundamentally, the findings offer a view of cynical beliefs as malleable (to a degree) and, more importantly, as functional. While much research has discussed the dysfunctional nature of cynical beliefs—leading to poor health and interpersonal relations, or low incomes (e.g., Abraham, 2000; Choy et al., 2021; Stavrova et al., 2020)—the present findings offer a more positive and functional view of cynicism. In line with evolutionarily minded theories and other theories that conceptualize (cynical) beliefs as a relatively accurate assessment of one's social environments (Leung et al., 2002), we found that people's cynical beliefs tracked changes in the objective and subjective vulnerability one faces across situations. So, people are not (initially at least) cynical for cynicism's sake, and neither are they completely predisposed to cynicism *per se*. Rather, cynical beliefs can stem from conditions that are objectively vulnerability-inducing. From these perspectives, cynical beliefs are instrumental for understanding and responding to the opportunities and threats present in one's social environment and thus serve an important role in aiding human survival and functioning (Katz, 1960; Neuberg et al., 2020).

Finally, the present research also contributes to research on interdependence theory, which examines how properties of interpersonal situations guide behavior (Kelley & Thibaut, 1978; Van Lange & Balliet, 2015). Interdependence theory provides a framework that outlines the dimensions on which interpersonal situations vary (e.g., Gerpott et al., 2018); here, we focused on the power differential between individuals (i.e., control)

and whether individuals correspond in their interests. While this framework has rarely been (and at best, indirectly) applied to a study of cultural variation (c.f., Talhelm et al., 2014), Study 4 showed that cultural variables like historical pathogen prevalence and individualism/collectivism may function as indicators of conflicting or corresponding interests. More recently, Balliet et al. (2017) theorized that cues of kinship and group status can track the level of conflicting (vs. corresponding) interests afforded by others. Indeed, Study 2 showed that both kin and close nonkin (vs. strangers) may afford more corresponding (and fewer conflicting) interests.

Limitations and future directions

A limitation of Study 4 was that the proposed moderators did not cleanly operationalize corresponding (vs. conflicting) interests. For instance, while I argued that collectivistic values may afford more situations with corresponding interests given the strong prioritization of cooperation with one's ingroup (Chen et al., 1998; Reis, 2008), it has also been argued that collectivistic values promote competition and non-cooperation (i.e., conflicting interests) against outgroup members (Yamagishi & Yamagishi, 1994). From this perspective, it is possible that the effect of individualism was confounded by other unidentified variables. However, that the findings employing historical pathogen prevalence and individualism [11] as moderators converged in a theoretically coherent manner suggests that such unidentified variables, if present, had minimal influence.

While I observed strong evidence for the moderated mediation model

[11] And GDP per capita and urban population (see *S5: analyses with alternative moderators for study 4)*

(i.e., a control × interests interaction on vulnerability to exploitation, which, consequently, predicted cynicism) across all three experiments, evidence that the moderation directly affected cynicism was weaker. In apparent contrast with the significant interaction terms observed in Study 4, the interaction term was marginally significant in Studies 1 and 2 and non-significant in Study 3. Notwithstanding the significant simple effects that occurred in the hypothesized directions—and that were, thus, consistent with my reasoning—the weak experimental effects (on cynicism) are worth discussing. One explanation may be a lack of statistical power. After all, the effects reported in Stavrova and Ehlebracht (2018a, 2019) and Study 1 were observed in large samples ($N > 10000$) that are well equipped to detect even minute effects. In contrast, the experiments—though well powered (Ns > 400) by experimental standards—may simply be unable to pick up the relevant effects. Indeed, the interaction term was significant when I performed an integrative data analysis, which provided a substantial boost in statistical power. However, if these effects are (in reality) extremely small, are they thus necessarily unimportant? Not quite. Small effects that recur and accumulate over time can lead to practically important and huge effects (Götz et al., 2022); likewise, minor but daily increases in cynicism may effect large changes in behavior over time.

Moreover, it is also possible that the weak direct effect (of the interaction on cynicism) attests to the complex psychological processes linking control to cynicism. That is, alternative mediating mechanisms that were unaccounted for may have exerted opposing moderation effects to the one observed in the present research and, thus, suppressed the overall effect (see *S2: brief explanation on suppressor effects*; Rucker et al., 2011).

Consistent with such a view, the direct effect of control on cynicism after accounting for the proposed mediation effects was *significant and positive* in all three experiments. In other words, higher control led to more cynical beliefs after accounting for the role of vulnerability. This dovetails with findings that power tends to promote perceptions that the self will be treated instrumentally by others (Inesi et al., 2012). I sought to test this possibility in Study 4 by including an equal control condition but found little support for it. Future research could more rigorously examine how such suppressing mediators can be isolated, operationalized, and tested.

One final possibility for the weak direct interaction effects is that the dependent measures were simply too insensitive to detect changes in cynicism that stemmed from the interaction effect. However, this is less likely. If the measures were tapping onto some trait-like variant of cynicism that was unamenable by and insensitive to the experimental manipulations, then I should not have detected the main effects of control and interests on cynicism (which I did) or found substantial effects of the mediator on cynicism (which were very strong). I was mindful of ensuring that the cynicism items related to participants' beliefs about the target in the particular situation or other similar situations (thus tapping onto a state-like variant of cynicism), rather than their beliefs about the target generally (which would have tapped onto a trait-like variant of cynicism) [12]. Indeed, when cynicism was measured both ways in

[12] At the dissertation proposal, MVV asked if cynicism in the current research was closer to a state or a trait. Roberts (2018) defines a state as a person's moment-to-moment thoughts, feelings, and behaviors, which arise in response to changes to one's environments; in contrast, traits represent specific, long-term patterning of these states. Most research has conceptualized cynicism as a general view of the world; here, cynicism is closer to a trait. However, as I noted, I operationalized cynicism as a participant's belief about the target in the particular (or other similar) situation; thus, cynicism is more state-like here. To some extent, whether a construct is conceptualized as a trait or state depends on whether it is studied as an outcome or predictor. As outcome variables (especially in experiments) tend to measure psychological

Study 2, the trait- and state-like measures of cynicism were only correlated $r = .40$ ($p < .001$), attesting to their conceptual independence.

While I argue that cynicism can be functional, I do not discount that it can also (often) be inaccurate. That is, the present findings show that people's perceptions of vulnerability tend to track the objective properties of a situation (e.g., the actual level of conflicting interests; Gerpott et al., 2018), but they may nonetheless overperceive or underperceive such characteristics. While the present research was not well-designed to test for accuracy of cynical judgments, such reasoning aligns with evolutionary perspectives like error management theory, which propose that judgment errors often occur systematically in ways that serve evolutionarily adaptive ends (Haselton & Buss, 2000). Future research can examine how such inaccuracies arise. As an example, consider the well-documented tendency for women to prioritize a mate's commitment (Haselton & Buss, 2000; Neel et al., 2016). From this perspective, women (but not men) have evolved an inclination to inaccurately underperceive a partner's commitment to better select a mate who is truly committed. Such a psychology may extend to perceptions of a mate as having less concern about her interests than he actually does; accordingly, we may expect women's (but not men's) cynical judgments about a partner to be more inaccurate (specifically, stronger) in this context [13].

It is worth pointing out that the experiments in the current dissertation employed relatively contrived and heavy-handed manipulations of control and

changes, they are necessarily more state-like. In contrast, there is typically greater interest in seeing how individual difference variables like cynicism—how cynical people usually are—predicts outcomes; here, cynicism is typically conceptualized as trait.

[13] I conducted some exploratory analyses of sex differences, though the findings were relatively inconsistent. See *S3: analyses of sex differences across studies 1-3*

interests. Indeed, throughout the experiments, participants either had full or no control, and had either completely conflicting or completely corresponding interests. Of course, much of daily life comprises of situations where people never have a complete lack of control or complete control; most situations in daily life also comprise of both corresponding and conflicting interests (i.e., mixed motive situations) (Columbus et al., 2021; Gerpott et al., 2018). Thus, while the current studies represent a useful proof-of-concept, an important aim of future research is to demonstrate the usefulness of the theoretical model to situations approximating daily life.

An important avenue for future research is to examine how the current theoretical model replicates across varying domain-specific conceptualizations of cynicism (e.g., organizational or political cynicism). Whether perceptions of corresponding interests will moderate the control-cynicism link to the same degree or in the same way is an open question. Indeed, some domains are inherently characterized by conflicting interests (e.g., politics); perhaps, effects of corresponding interests are weaker in such domains. If and how these domain-specific variants of cynicism affect or are affected by domain-general cynicism is also an underexamined topic worth expanding on. The present research can be usefully extended to understanding cynicism in close relationships; examining how people vary in their subjective perceptions of conflicting interests (especially when these perceptions differ from objective reality) and how that influences their cynical beliefs about a partner. In particular, there are likely close conceptual linkages between relational cynicism and extant work on risk regulation in relationships (Murray et al., 2006)

Finally, the present research examined cynicism as a belief, but work that expands this examination to the behavioral or affective domains are welcome. For instance, Stavrova and colleagues previously identified income, cognitive ability, and disrespect as outcomes of cynical beliefs (Stavrova & Ehlebracht, 2016, 2018b; Stavrova et al., 2020), though arguably only disrespect constitutes a behavior stemming from cynicism. Recently, Choy et al. (2021) examined the impact of cynicism on prosocial behavior, though the focus of that research was on cynicism's role as a moderator. Examining the proximate behavioral and affective correlates of cynicism—such as discrimination of outgroups or even ingroup favoritism—can expand the nomological network of cynicism.

Conclusion

Fan theories link Dr. House's cynicism to his inability to bring under control various personal troubles; the present research suggests that such a view is on track but incomplete. While recent research shows that a lack of control leads to greater cynicism through increases in one's perception of vulnerability, the present findings show that these psychological linkages can weaken in certain situations. Specifically, situations where people have common interests attenuate the control-cynicism link, while situations with conflicting interests strengthen it. Given that many situations in daily life and on television screens can involve a lack of control, understanding how interests tamper or exacerbate the rise of cynicism can be insightful.

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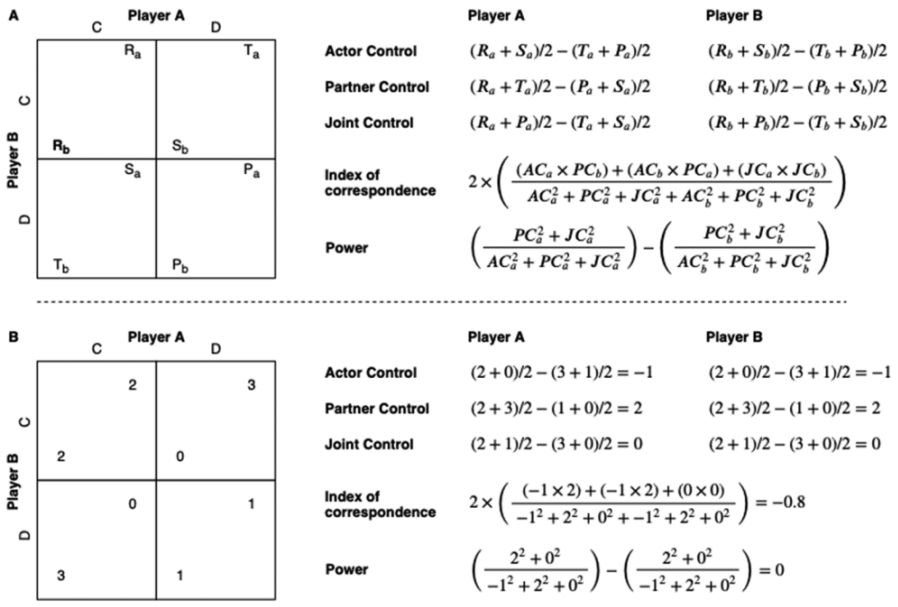
Supplementary analyses

S1: power and correspondence indices for study 1

Broadly, three components of variance can be identified within economic games: actor control, partner control, and joint control (Kelley et al., 2003). As shown in Figure 1 of Columbus et al. (2019), indices that track the degree of control (or power; van Vugt & Tybur, 2015) a player has and the correspondence of interests between a player and his partner can be derived from different components of variance(see figure below, from Figure 1 of Columbus et al. [2019]).



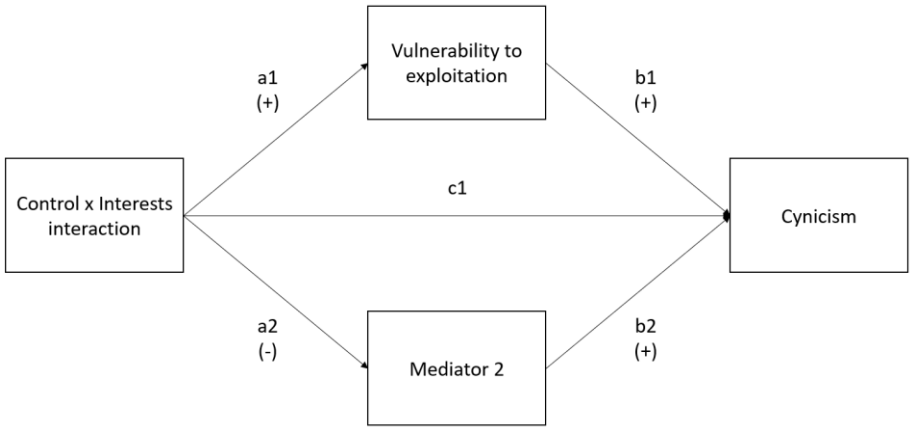
The table below reports the derivations for the power and correspondence indices for all economic games employed in study 2. A power and correspondence index of -1.00 (+1.00) indicates lower (higher) power for the participant—player A—and conflicting (corresponding) interests between both players respectively.

			Actor control		Partner control		Joint control		Index	
Control	Interests	Round	A	B	A	B	A	B	Power	Correspondence
Low	Conflicting	1	-14	0	0	14	0	0	-1	-1
		2	-8	0	0	8	0	0	-1	-1
		3	-9	0	0	9	0	0	-1	-1
High	Conflicting	1	0	-14	14	0	0	0	-1	1
		2	0	-8	8	0	0	0	-1	1
		3	0	-9	9	0	0	0	-1	1
Low	Corresponding	1	14	0	0	14	0	0	1	-1
		2	8	0	0	8	0	0	1	-1
		3	9	0	0	9	0	0	1	-1
High	Corresponding	1	0	14	14	0	0	0	1	1
		2	0	8	8	0	0	0	1	1
		3	0	9	9	0	0	0	1	1
Notes. A = participant, B = partner										

S2: brief explanation on suppressor effects

Suppressor effects provide one explanation for why direct effects may be weak, despite the presence of significant mediating effects. From a statistical perspective, the direct effect of a predictor on an outcome is derived from the sum of all mediating effects (e.g., a1*b1 + a2*b2) and any residual direct effects (e.g., c1). In particular, the direct effect may be weak or null when multiple mediating effects exist, with some of these effects being of the same magnitude but of opposing direction. An example is illustrated below.

Assume that the control × interests interaction has opposing effects on vulnerability (a positive effect of a1) and a second mediator (a negative effect of a2), and that both mediators had similar effects on cynicism (positive effects of b1 and b2 respectively). If a1*b1 and a2*b2 are of the same magnitude, the resulting direct effect will be weak or null, since the product terms are of opposite signs and will cancel one another out.



S3: analyses of sex differences across studies 1-3

As a set of exploratory analyses, I tested if the interaction effects across the experiments were qualified by sex. That is, I tested three-way ANOVAs with cynicism and vulnerability as outcomes and examine if the moderated mediation effects differed by sex. As shown in the table below, evidence for sex differences were relatively inconsistent.

Study	Test	Statistically qualified by sex?	Notes
1	Int. on situational cynicism	No	
	Int. on vulnerability to exploitation	Marginal	When interests are conflicting; simple effect of control on vulnerability was 3x stronger for men (η_p^2 =.055) than for women (η_p^2 =.017)
	Int. on general cynicism	No	
	Moderated mediation model	Yes	Index of moderated mediation model was significant for men (*B* = 0.51, *SE* = 0.13, 95% CI [0.26, 0.77]) but not women (*B* = 0.21, *SE* = 0.12, 95% CI [-0.02, 0.44])
2	Int. on situational cynicism	No	
	Int. on vulnerability to exploitation	No	
	Moderated mediation model	No	Effects were somewhat stronger for men than for women
3	Int. on situational cynicism	No	
	Int. on vulnerability to exploitation	No	
	Moderated mediation model	No	The difference in strength of conditional indirect effects was larger for women than for men

S4: tests of alternative theoretical models in study 4

Much of the theorizing in the current dissertation took as a starting point the robust link between a sense of control and cynicism found in the literature and argued that this relationship should be moderated (in particular, by the presence of conflicting and corresponding interests). The focus here is on demonstrating variability in the link between control and cynicism—in itself a novel finding—and identifying factors that account for this variability.

However, as MVV pointed out during the dissertation proposal, it does make sense that other variables should predict a sense of control and, in turn, cynicism. In part, this view stems from a top-down approach to thinking about the roots of cynicism. That is, drawing from theories in evolutionary psychology, how can we think about the antecedents of cynicism? From this perspective, a sense of control may not be the most appropriate antecedent—and may instead be more appropriate as a mediator—as compared to more evolutionarily relevant predictors such as ecological variables that track the level of harshness or unpredictability in an environment (e.g. Mittal & Griskevicius, 2014). Here, the focus of this alternative approach is to situate cynicism within the broader evolutionary psychology literature.

Both frameworks have different starting points and thus aim to contribute to the broader literature differently. One way to weigh the relative usefulness of either approach is to test it against the current data. To this end, I ran several multilevel mediation models using the SPSS macro *MLMed* (Hayes & Rockwood, 2020). Specifically, I included (separately) several candidate evolutionarily relevant country-level indicators as predictors, sense of control as a mediator, and cynicism as an outcome. These predictors included pathogen prevalence, rule of law, and homicide rates (as indicators of harshness), GDP growth, and unemployment (as indicators of economic uncertainty and unpredictability; see e.g., Sirola & Pitesa, 2018). According to the alternative approach, we should witness at least some of these mediational models approaching significance; however, results indicated that sense of control did not mediate the relationship between any of these variables and cynicism (see table below). Of course, these alternative models should be more rigorously tested in future studies to fully evaluate their merits. Nonetheless, on balance, these (and Study 1's) findings may lend more support to the original theoretical framework.

Predictor	Indirect effect (*B*)	*SE*	*p*	95% CI
Historical pathogen prevalence	0.072	0.069	.293	[-0.050, 0.223]
Rule of law	-0.160	0.188	.395	[-0.578, 0.179]
Homicide rates	0.012	0.009	.219	[-0.002,0.033]
GDP growth	0.003	0.004	.445	[-0.004, 0.013]
Unemployment	0.001	0.004	.773	[-0.006, 0.009]

Notes. All theoretical models tested a sense of control as a mediator and cynicism as an outcome. Because the inclusion of standardized/group mean-centered variables would have significantly reduced variability and led to errors in the analyses, all variables were entered unstandardized.

Similarly, KT pointed out the possibility that individualism/collectivism could mediate the link between historical pathogen

prevalence and cynicism. By extension, this proposes a mediated moderation model, with the individualism mediating the moderating effect of pathogen prevalence on the link between control and cynicism. This is also possible, and is a prediction directly derived from the pathogen prevalence literature (Fincher et al., 2008). While I do think this is plausible, currently available and common tools do not allow such analyses to be performed; for instance, *MLMed* is currently limited to testing 2-1-1 models (as opposed to the 2-2-1 model here) and currently only allows for level-2 moderators (as opposed to the level-1 moderator here).

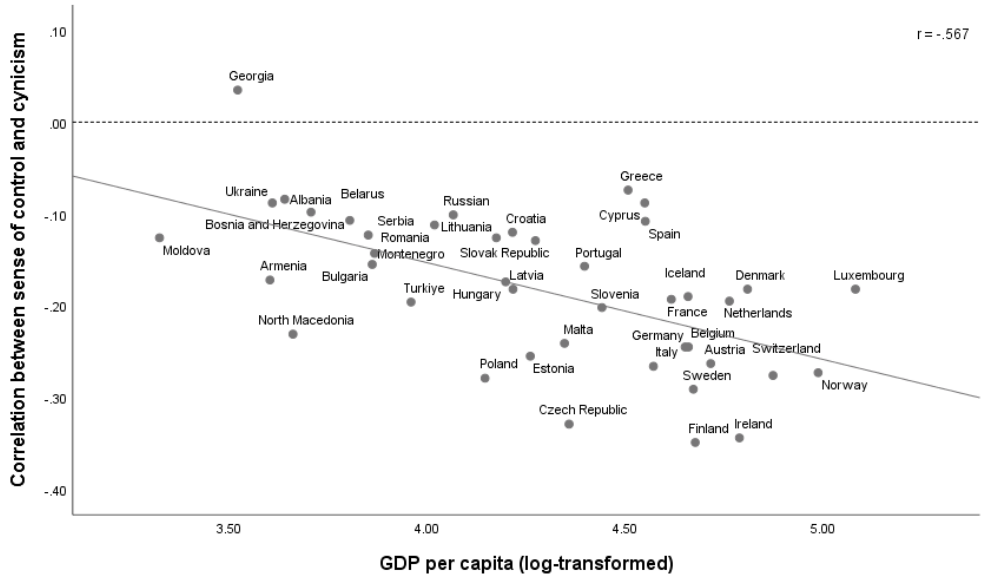
S5: analyses with alternative moderators for study 4

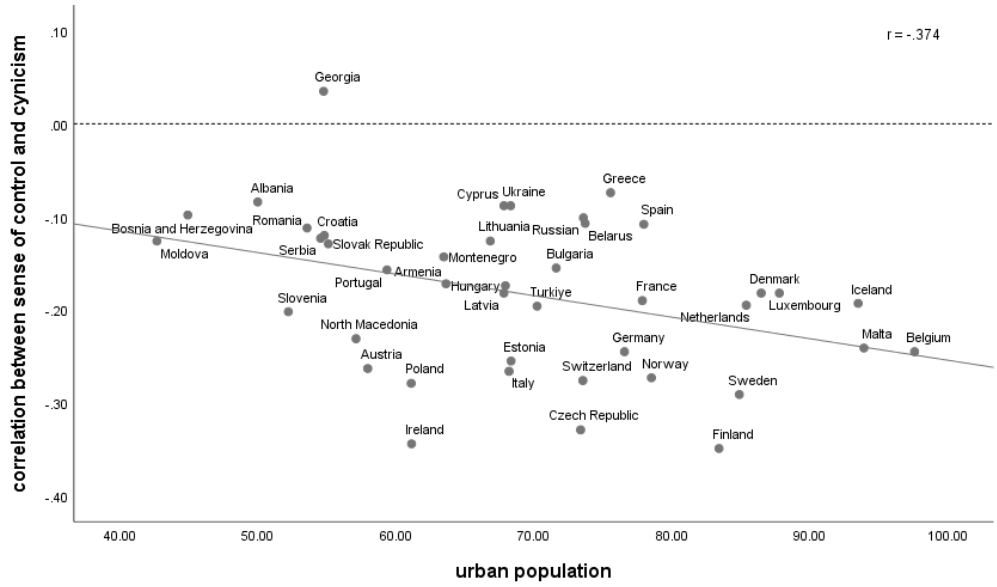
In addition to examining the role of historical pathogen prevalence and individualism as moderators of the control-cyncism link, I also examined GDP per capita (log-transformed) and urban population (as a percentage of the population) as alternative moderators to demonstrate convergent validity for the tests conducted in study 1. Conceptually, both national wealth and urbanization are significant driver of lower levels of collectivism (Kashima et al., 2004) given their associations with greater modernization, which promotes greater autonomous decision making, more individualistic lifestyles, and a reduction in the importance of social relationships (Hamamura, 2012; Hofstede et al., 2010). Indeed, in my own analysis, the urban population of a country (as a percentage of total population) and GDP per capita were correlated with individualism at $r = .631$ and $r = .763$ (both ps $< .001$) respectively. Thus, these variables were examined as moderators to affirm the robustness of the main analyses. In line with the theoretical model, I expected the relationship between control and cynicism to weaken in societies with lower levels of GDP per capita and urban population. The table below reports the results of these multilevel analyses.

Variables	Model 1		Model 2		Model 3		Model 4	
Predictors	*B*	*SE*	*B*	*SE*	*B*	*SE*	*B*	*SE*
Intercept	-0.023	0.041	-0.077*	0.033	-0.023	0.042	-0.077*	0.033
Sense of control	-0.060***	0.001	-0.055***	0.002	-0.058***	0.001	-0.051***	0.002
GDP per capita	-0.224***	0.041	-0.033	0.075				
Control x GDP pc	-0.018***	0.001	-0.021***	0.002				
Urban population					-0.210***	0.043	-0.073	0.056
Control x urban pop.					-0.013***	0.001	-0.016***	0.002
Covariates								
Sex			0.064***	0.008			0.064***	0.008
Age			-0.004***	0.000			-0.004***	0.000
Education			-0.029***	0.002			-0.029***	0.002
Mthly. hh. inc. pc			-0.018***	0.003			-0.019***	0.003
Perceived health			-0.074***	0.005			-0.075***	0.005
Homicide rates			-0.087	0.042			-0.087	0.042
Rule of law			-0.180*	0.067			-0.180*	0.067
Individualism			-0.008	0.055			-0.009	0.055
Pathogen prevalence			0.088	0.045			0.088	0.045
GDP per capita							-0.033	0.076
Urban population			-0.073	0.056				

Consistent with my expectations and in line with the main analyses, correlation analyses at the country level showed that GDP per capita ($r = -.57$) and urban population ($r = -.37$) were negatively correlated with country level control-cynicism scores. That is, in societies with lower GDP per capita and urban population (i.e., more collectivistic), the relationship between control and cynicism tended to zero (see figures below). Multilevel analyses also showed that the effect of control on cynicism weakened as GDP per capita ($B = 0.021$, $SE = 0.002$, t (33543) $= -11.23$, $p < .001$; Model 2) and urban population ($B = 0.016$, $SE = 0.002$, t (33543) $= -7.45$, $p < .001$; Model 4) decreased in a society. The moderating effects of GDP per capita and urban population held even without controls (model 1 and 3 respectively). Overall,

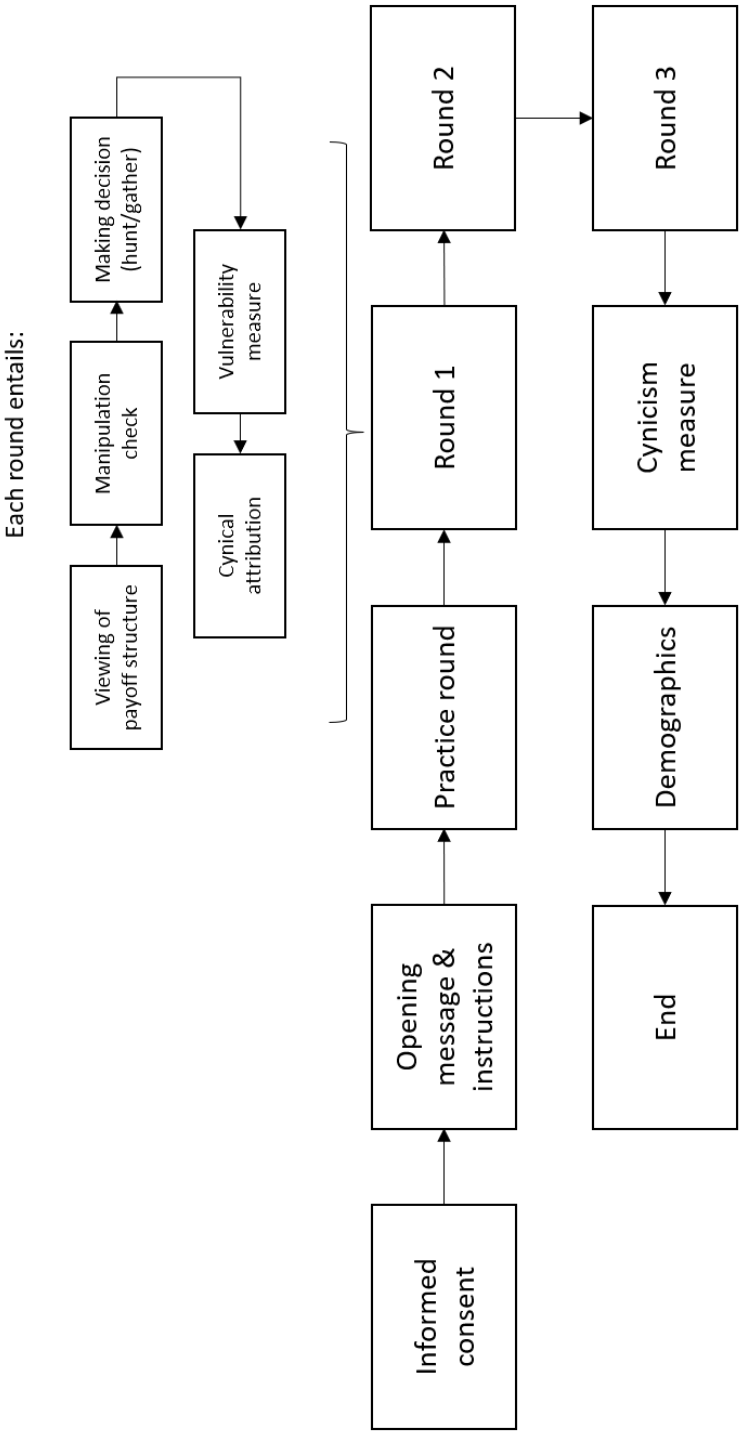
the findings support the main analyses.





Appendices (materials)

Appendix A: Materials for study 1 (study flow)



Appendix B: Materials for study 1 (Economic game manipulation)

Opening message

Welcome! In this study, you stand a chance to win some money by playing a series of decision-making games with randomly assigned partners. To begin, please key in the initials of your first and last name (e.g., John Smith as JS) and click next to read the game instructions.

Instructions

Shortly, you will be playing a hypothetical hunting game with an assigned partner. In each round, both you and your partner will be presented with a decision to either hunt or gather. Both players will have to make their decisions based on the payoff table presented. Additionally, both of you will make your decision without knowing the other's decision. The point of this game is to maximize the number of points you gain. Here's an example of a payoff table:

		Your partner's (Initials: MD) decision	
		Hunt	Gather
Your decision	Hunt	4 / 4	1 / -1
	Gather	-1 / 1	1 / 1

As you can see, the number of points (i.e., your payoff) in each round may depend on the decisions you and your partner make. Your decisions and payoffs are shown in green, while your partner's decisions and payoffs are shown in red. Here is an example of how to read the payoff table above:

> If you choose to hunt your partner chooses to gather, the respective payoffs are shown in the top right cell, such that you will lose 1 point while your partner gains 1 point. In contrast, if both you and your partner choose to hunt, each will receive 4 points (top left cell).

You will play 3 rounds of this game, each time with a different interaction partner. The points you receive from each round will be accumulated. At the end of the game, the 20 players with the highest accumulated points will be entered into a raffle; of this group, 3 will be chosen to earn an additional bonus of 4 USD. Thus, the maximum compensation you may be entitled to could potentially go up to 5 USD.

In the next section, we will have a practice round to ensure you've understood the instructions accurately. You should only proceed to the practice round if you understand the instructions.

Condition 1: Low control, conflicting interests (Rounds 1 to 3)

In this condition, participants' actions have no influence on their partner's outcomes: for instance, if the partner chooses to hunt, he will earn 10 points regardless of what the participant chooses to do. Participants also have no influence over their own outcome: The participant's outcome is entirely dependent on what the partner chooses. Additionally, what is good for the partner (to hunt) is bad for the participant and vice versa.

		Your partner's (Initials: MD) decision	
		Gather	Hunt
Your decision	Gather	-4 / 10	10 / -4
	Hunt	-4 / 10	10 / -4

		Your partner's (Initials: JP) decision	
		Gather	Hunt
Your decision	Gather	3 / 11	11 / 3
	Hunt	3 / 11	11 / 3

		Your partner's (Initials: AS) decision	
		Gather	Hunt
Your decision	Gather	0 / 9	9 / 0
	Hunt	0 / 9	9 / 0

Condition 2: High control, conflicting interests (Rounds 1 to 3)

Here, participants' actions have complete influence over their own and their partner's outcomes: if the participant chooses to hunt, he will earn 10 points regardless of what the partner chooses to do, and the partner's outcome is entirely dependent on what the participant chooses. Additionally, what is good for the partner (to hunt) is bad for the participant and vice versa.

		Your partner's (Initials: MD) decision	
		Gather	Hunt
Your decision	Gather	10 / -4	10 / -4
	Hunt	-4 / 10	-4 / 10

		Your partner's (Initials: JP) decision	
		Gather	Hunt
Your decision	Gather	11 / 3	11 / 3
	Hunt	3 / 11	3 / 11

		Your partner's (Initials: AS) decision	
		Gather	Hunt
Your decision	Gather	9 / 0	9 / 0
	Hunt	0 / 9	0 / 9

Condition 3: Low control, corresponding interests

In this condition, participants' actions have no influence on their partner's outcomes: if the partner chooses to gather, he will earn 10 points regardless of what the participant chooses to do. Participants also have no influence over their own outcome: The participant's outcome is entirely dependent on what the partner chooses. Additionally, what is good for the partner (to gather) is also good for the participant.

		Your partner's (Initials: MD) decision	
		Gather	Hunt
Your decision	Gather	10 / 10	-4 / -4
	Hunt	10 / 10	-4 / -4

		Your partner's (Initials: JP) decision	
		Gather	Hunt
Your decision	Gather	11 / 11	3 / 3
	Hunt	11 / 11	3 / 3

		Your partner's (Initials: AS) decision	
		Gather	Hunt
Your decision	Gather	9 / 9	0 / 0
	Hunt	9 / 9	0 / 0

Condition 4: High control, corresponding interests

Here, participants' actions have complete influence over their own and their partner's outcomes: if the participant chooses to gather, he will earn 10 points regardless of what the partner chooses to do, and the partner's outcome is entirely dependent on what the participant chooses. Additionally, what is good for the partner (to gather) is also good for the participant.

		Your partner's (Initials: MD) decision	
		Gather	Hunt
Your decision	Gather	10 / 10	10 / 10
	Hunt	-4 / -4	-4 / -4

		Your partner's (Initials: JP) decision	
		Gather	Hunt
Your decision	Gather	11 / 11	11 / 11
	Hunt	3 / 3	3 / 3

		Your partner's (Initials: AS) decision	
		Gather	Hunt
Your decision	Gather	9 / 9	9 / 9
	Hunt	0 / 0	0 / 0

Appendix C: Materials for study 1 (questionnaires)

Demographics

"What is your sex"
a. Male
b. Female

"What is your age"

"What is your ethnicity"

"Think of this ladder below as representing where different people in America stand. At the top of the ladder are people who are best off—those who have the most money, the most education, and the most respected job prospects. At the bottom are those who are worst off—who have the least money, the least education, and the least-respected or no job prospects. The higher you are on this ladder, the closer you are to the people at the very top; the lower you are on this ladder, the closer you are to the people at the very bottom. Compared to others in America, where would you place yourself on this ladder? Please choose an option below."

Vulnerability to exploitation

"In this situation, my partner *can* exploit me for his/her own gain"

(To be rated on a scale from 1 = *strongly disagree*, 5 = *strongly agree*)

Cynical attribution

"In this situation, I wonder what hidden reason my partner may have for doing something nice to me"
"In this situation, my partner inwardly dislikes putting him/herself out to help other people" "In this situation, it is safer not to trust my partner"

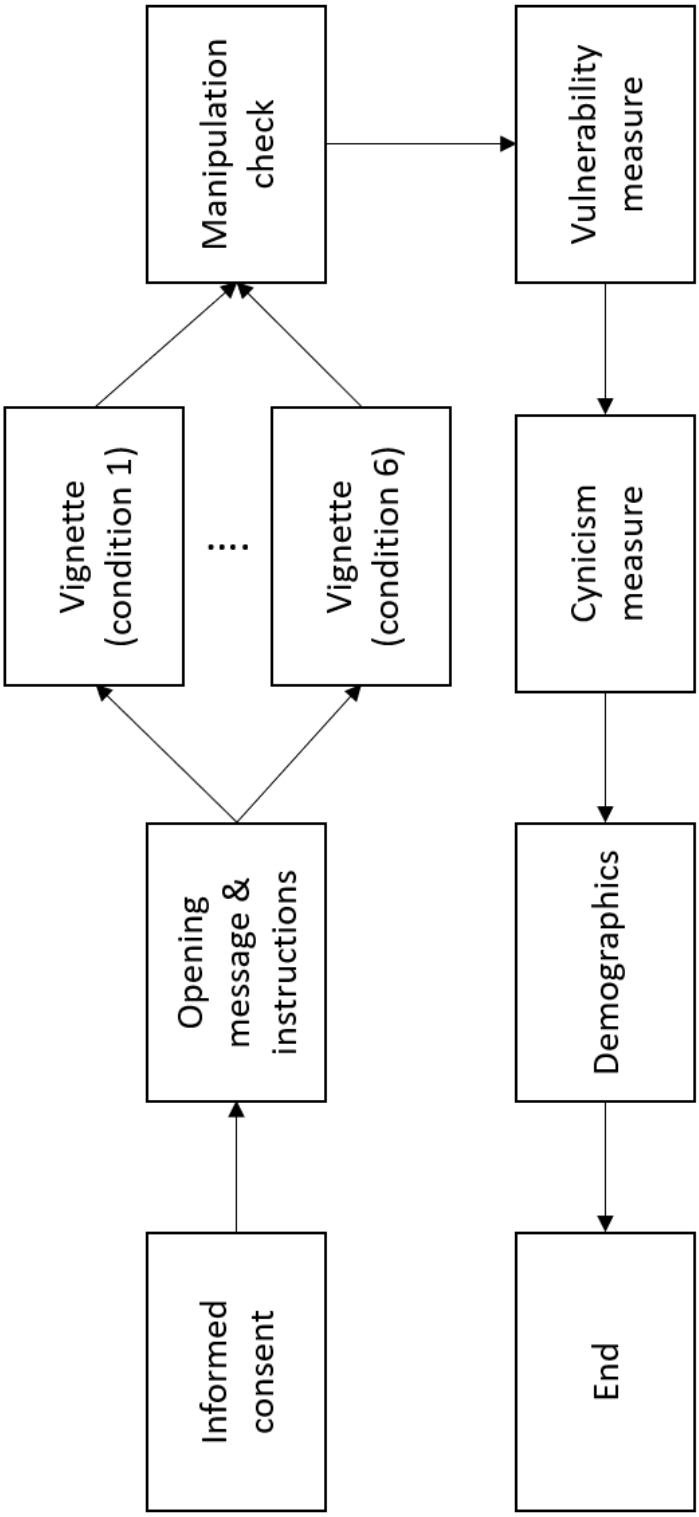
(To be rated on a scale from 1 = *strongly disagree*, 7 = *strongly agree*)

Cynicism

1. I think most people would lie to get ahead
2. Most people inwardly dislike putting themselves out to help other people
3. Most people will use somewhat unfair means to gain profit or an advantage rather than lose it
4. I commonly wonder what hidden reason another person may have for doing something nice to me
5. No one cares much what happens to you
6. Most people are honest chiefly through fear of being caught
7. It is safer to trust nobody
8. Most people make friends because friends are likely to be useful to them

(To be rated on a scale from 1 = *strongly disagree*, 7 = *strongly agree*)

Appendix D: Materials for study 2 (study flow)



Appendix E: Materials for study 2 (experimental manipulation)

Opening message
In this study, you will be asked to consider different social situations and how you might think, feel, and act in these situations.

Condition 1: low control, kin

Think of someone **who is part of your kin**. This should be someone that you are genetically related to, such as your biological parents, siblings, or extended family members (e.g., grandparents, cousins, aunts, uncles).

Once ready, please type in the initials of this person's name (e.g., JD for Jane Doe; MDB for Matt Dan Baker).

Here, we would like you to reflect on your relationship with XXX. What kind of person is XXX like? What is your relationship with XXX like? How does an interaction with XXX usually go? How do you feel about him/her? Please take some time to think about these questions seriously.

Once (and only when) you are ready, please click next to proceed.

Here, we would like you to read through the following passage. Focus on immersing yourself in the situation described below and consider what you might be thinking and feeling, and what you might do.

Imagine this:

> You and XXX have been selected to enter a raffle where the top prize is a very large sum of money! In total, 100 raffle tickets will be entered into the draw, so each ticket provides a 1% chance of winning. A total of ten tickets have been allocated to you and XXX; that is, the ten tickets are to be shared between XXX and yourself.
>
> XXX has been asked to decide how to allocate the tickets between him/herself and you. XXX can allocate the tickets however he/she wishes. That is, XXX is free to allocate as many (or as few) of the ten tickets to you as he/she likes, from a minimum of zero tickets to a maximum of ten tickets. XXX will be making his/her decision in private and will not have to inform you about (or seek your approval for) the final decision.

Once (and only when) you are ready, please click next to proceed.

Condition 2: high control, kin

Think of someone **who is part of your kin**. This should be someone that you are genetically related to, such as your biological parents, siblings, or extended family members (e.g., grandparents, cousins, aunts, uncles).

Once ready, please type in the initials of this person's name (e.g., JD for Jane Doe; MDB for Matt Dan Baker).

Here, we would like you to reflect on your relationship with XXX. What kind of person is XXX like? What is your relationship with XXX like? How does an interaction with XXX usually go? How do you feel about him/her? Please take some time to think about these questions seriously.

Once (and only when) you are ready, please click next to proceed.

Here, we would like you to read through the following passage. Focus on immersing yourself in the situation described below and consider what you might be thinking and feeling, and what you might do.

Imagine this:

> You and XXX have been selected to enter a raffle where the top prize is a very large sum of money! In total, 100 raffle tickets will be entered into the draw, so each ticket provides a 1% chance of winning. A total of ten tickets have been allocated to you and XXX; that is, the ten tickets are to be shared between XXX and yourself.
>
> You have been asked to decide how to allocate the tickets between yourself and XXX. You can allocate the tickets however you wish. That is, you are free to allocate as many (or as few) of the ten tickets to XXX as you like, from a minimum of zero tickets to a maximum of ten tickets. You will be making your decision in private and will not have to inform XXX about (or seek his/her approval for) the final decision.

Once (and only when) you are ready, please click next to proceed.

Condition 3: low control, close non-kin

Think of someone **whom you have a personal relationship with but is not part of your kin**. This might be someone whom you know well and feel close to (e.g., close friend, co-worker, neighbor), but should not be someone that you are genetically related (e.g., biological parents, siblings, extended family).

Once ready, please type in the initials of this person's name (e.g., JD for Jane

Doe; MDB for Matt Dan Baker).

Here, we would like you to reflect on your relationship with XXX. What kind of person is XXX like? What is your relationship with XXX like? How does an interaction with XXX usually go? How do you feel about him/her? Please take some time to think about these questions seriously.

Once (and only when) you are ready, please click next to proceed.

Here, we would like you to read through the following passage. Focus on immersing yourself in the situation described below and consider what you might be thinking and feeling, and what you might do.

Imagine this:

> You and XXX have been selected to enter a raffle where the top prize is a very large sum of money! In total, 100 raffle tickets will be entered into the draw, so each ticket provides a 1% chance of winning. A total of ten tickets have been allocated to you and XXX; that is, the ten tickets are to be shared between XXX and yourself.
>
> XXX has been asked to decide how to allocate the tickets between him/herself and you. XXX can allocate the tickets however he/she wishes. That is, XXX is free to allocate as many (or as few) of the ten tickets to you as he/she likes, from a minimum of zero tickets to a maximum of ten tickets. XXX will be making his/her decision in private and will not have to inform you about (or seek your approval for) the final decision.

Once (and only when) you are ready, please click next to proceed.

Condition 4: high control, close non-kin

Think of someone **whom you have a personal relationship with but is not part of your kin**. This might be someone whom you know well and feel close to (e.g., close friend, co-worker, neighbor), but should not be someone that you are genetically related (e.g., biological parents, siblings, extended family).

Once ready, please type in the initials of this person's name (e.g., JD for Jane Doe; MDB for Matt Dan Baker).

Here, we would like you to reflect on your relationship with XXX. What kind of person is XXX like? What is your relationship with XXX like? How does an interaction with XXX usually go? How do you feel about him/her? Please

take some time to think about these questions seriously.

Once (and only when) you are ready, please click next to proceed.

Here, we would like you to read through the following passage. Focus on immersing yourself in the situation described below and consider what you might be thinking and feeling, and what you might do.

Imagine this:

> You and XXX have been selected to enter a raffle where the top prize is a very large sum of money! In total, 100 raffle tickets will be entered into the draw, so each ticket provides a 1% chance of winning. A total of ten tickets have been allocated to you and XXX; that is, the ten tickets are to be shared between XXX and yourself.
>
> You have been asked to decide how to allocate the tickets between yourself and XXX. You can allocate the tickets however you wish. That is, you are free to allocate as many (or as few) of the ten tickets to XXX as you like, from a minimum of zero tickets to a maximum of ten tickets. You will be making your decision in private and will not have to inform XXX about (or seek his/her approval for) the final decision.

Once (and only when) you are ready, please click next to proceed.

Condition 5: low control, stranger

Think of **a stranger**: This is someone who is neither biologically related to you nor someone that you are personally close to. This might be someone that you encounter in your daily life, but that you do not know and have never interacted with.

Once ready, type in the words the stranger

Here, we would like you to reflect on the stranger. What kind of person might he/she be like? What might a relationship with the stranger be like? How might an interaction with the stranger go? How might you feel about him/her? Please take some time to think about these questions seriously.

Once (and only when) you are ready, please click next to proceed.

Here, we would like you to read through the following passage. Focus on immersing yourself in the situation described below and consider what you

might be thinking and feeling, and what you might do.

Imagine this:

> You and the stranger have been selected to enter a raffle where the top prize is a very large sum of money! In total, 100 raffle tickets will be entered into the draw, so each ticket provides a 1% chance of winning. A total of ten tickets have been allocated to you and the stranger; that is, the ten tickets are to be shared between the stranger and yourself.
>
> The stranger has been asked to decide how to allocate the tickets between him/herself and you. The stranger can allocate the tickets however he/she wishes. That is, the stranger is free to allocate as many (or as few) of the ten tickets to you as he/she likes, from a minimum of zero tickets to a maximum of ten tickets. The stranger will be making his/her decision in private and will not have to inform you about (or seek your approval for) the final decision.

Once (and only when) you are ready, please click next to proceed.

Condition 6: high control, stranger

Think of **a stranger**: This is someone who is neither biologically related to you nor someone that you are personally close to. This might be someone that you encounter in your daily life, but that you do not know and have never interacted with.

Once ready, type in the words the stranger

Here, we would like you to reflect on the stranger. What kind of person might he/she be like? What might a relationship with the stranger be like? How might an interaction with the stranger go? How might you feel about him/her? Please take some time to think about these questions seriously.

Once (and only when) you are ready, please click next to proceed.

Here, we would like you to read through the following passage. Focus on immersing yourself in the situation described below and consider what you might be thinking and feeling, and what you might do.

Imagine this:

> You and the stranger have been selected to enter a raffle where the top prize is a very large sum of money! In total, 100 raffle tickets will be entered into the draw, so each ticket provides a 1% chance of winning.

A total of ten tickets have been allocated to you and the stranger; that is, the ten tickets are to be shared between the stranger and yourself.

You have been asked to decide how to allocate the tickets between yourself and the stranger. You can allocate the tickets however you wish. That is, you are free to allocate as many (or as few) of the ten tickets to the stranger as you like, from a minimum of zero tickets to a maximum of ten tickets. You will be making your decision in private and will not have to inform the stranger about (or seek his/her approval for) the final decision.

Once (and only when) you are ready, please click next to proceed.

Appendix F: Materials for study 2 (questionnaires)

Demographics

"What is your sex"
a. Male
b. Female

"What is your age"

"What is your highest education level?"

"What is your ethnicity"

"Think of this ladder below as representing where different people in America stand. At the top of the ladder are people who are best off—those who have the most money, the most education, and the most respected job prospects. At the bottom are those who are worst off—who have the least money, the least education, and the least-respected or no job prospects. The higher you are on this ladder, the closer you are to the people at the very top; the lower you are on this ladder, the closer you are to the people at the very bottom. Compared to others in America, where would you place yourself on this ladder? Please choose an option below."

Manipulation check

Sometimes, people have conflicting interests (i.e., prefer different and conflicting outcomes), where the best outcome for one person entails the worst outcome for another (e.g., in a chess game, for a person to win, the other must lose). Other times, people have overlapping interests (i.e., prefer the same outcomes), such that the best outcome for one person is also the best outcome for another (e.g., in a team sport, if one person wins, so does the other). Please rate the extent to which you agree with the following statement:

Generally, XXX and I overlap in the outcomes that we prefer.

(To be rated on a scale from 1 = *strongly disagree*; 7 = *strongly agree*)

In the situation just described, who is most in control of what happens? By control, we mean the extent to which someone is able to influence his/her own outcomes and the outcomes of others around them.

(To be rated on a scale from 1 = definitely XXX to 5 = definitely me).

Vulnerability to exploitation

"In this situation, it is likely that XXX would exploit me for his/her own gain"
"In the situation, XXX could easily take advantage of me for his/her own interest"
"In the situation I described, I would feel vulnerable to exploitation by XXX"

(To be rated on a scale from 1 = *strongly disagree*, 7 = *strongly agree*)

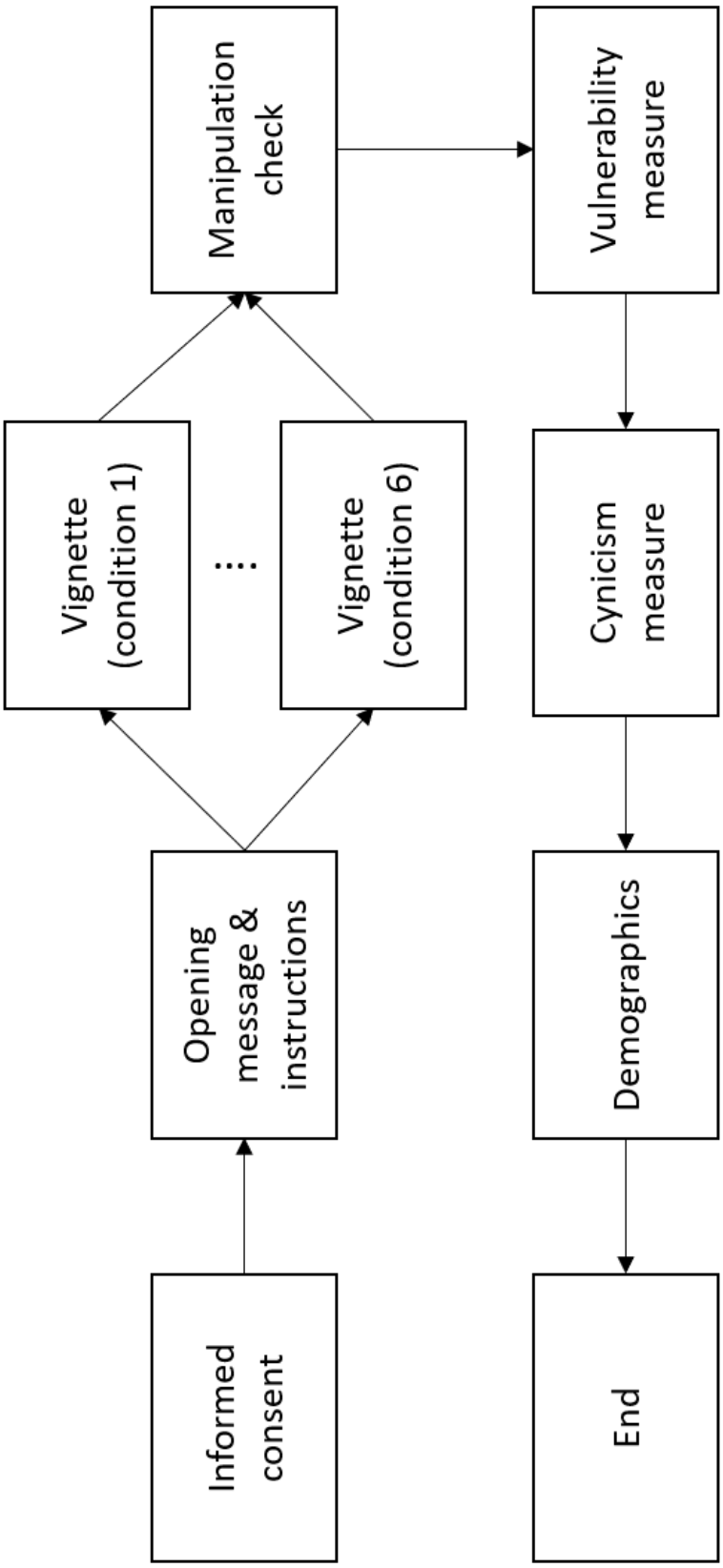
Cynicism

In the situation just described (and other similar situations)…

1. I think XXX would lie to get ahead
2. XXX would inwardly dislike putting him/herself out to help me
3. XXX would use somewhat unfair means to gain profit or an advantage rather than lose it
4. I would wonder what hidden reason XXX may have for doing something nice to me
5. XXX does not care much what happens to me
6. XXX would be honest chiefly through fear of being caught
7. It would be safer not to trust XXX

(To be rated on a scale from 1 = *strongly disagree*, 7 = *strongly agree*)

Appendix G: Materials for study 3 (study flow)



Appendix H: Materials for study 3 (experimental manipulation)

Condition 1: low control, conflicting interests

Take some time to read about the following situation. Immerse yourself in it and consider how you might be thinking or feeling in this situation.

You work at a large company that is about to decide on upcoming promotions soon. This year, the company is looking to promote **one** employee only. The company has declared that if it is unable to identify a suitable candidate, then no one will be promoted. **In other words, either a suitable employee is promoted, or no one is promoted.**

You and a coworker, **Robin**, are among the employees under consideration for promotion. You have never met Robin (who is of the same gender and age as you but works in a different department) and learned that both of you have worked at the company for the same amount of time, have similar work performances, and are equally regarded in the company. **Both you and Robin would be happy to receive a promotion.** While a promotion comes with new responsibilities, it is also a recognition of your hard work, a progression of your careers, and comes with increased remuneration and benefits.

While the other candidates have significantly weaker records, **both you and Robin are the only ones who clearly meet the criteria for promotion**. It is obvious to everyone (including yourselves) that you and Robin are frontrunners for promotion. However, given the company's desire to either promote one good employee or no one at all, **it is likely that you will not be promoted if Robin is identified for promotion (and vice versa). That is, in all likelihood, either you will be promoted (and Robin will not), or Robin will be promoted (and you will not).**

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The following passage continues from the previous one you read. Focus on immersing yourself in the situation described below and consider what you might be thinking and feeling, and what you might do. Imagine this:

As part of the consideration process, assessments of each candidate's suitability for promotion are submitted. One person is randomly selected from within the company to make an assessment for each candidate; anyone (even the candidate themselves) may be randomly selected to provide the assessment. Sufficient relevant information (e.g., who this person is, what their performance is like, how others generally perceive them) will be given to the assessor to make an informed evaluation. This assessment is not the only factor that matters, but it will have some influence over any decisions to promote you (or not).

The both of you learn that, by coincidence, **Robin was selected to assess their own suitability for promotion and your suitability for promotion**. In other words, Robin will make two assessments: a self-assessment and an assessment of you. Robin's assessments will be directly submitted to the promotion evaluation committee and need not be shared with you.

Once (and only when) you are ready, please click next to proceed.

Condition 2: equal control, conflicting interests

Take some time to read about the following situation. Immerse yourself in it and consider how you might be thinking or feeling in this situation.

You work at a large company that is about to decide on upcoming promotions soon. This year, the company is looking to promote **one** employee only. The company has declared that if it is unable to identify a suitable candidate, then no one will be promoted. **In other words, either a suitable employee is promoted, or no one is promoted.**

You and a coworker, **Robin**, are among the employees under consideration for promotion. You have never met Robin (who is of the same gender and age as you but works in a different department) and learned that both of you have worked at the company for the same amount of time, have similar work performances, and are equally regarded in the company. **Both you and Robin would be happy to receive a promotion.** While a promotion comes with new responsibilities, it is also a recognition of your hard work, a progression of your careers, and comes with increased remuneration and benefits.

While the other candidates have significantly weaker records, **both you and Robin are the only ones who clearly meet the criteria for promotion**. It is obvious to everyone (including yourselves) that you and Robin are frontrunners for promotion. However, given the company's desire to either promote one good employee or no one at all, **it is likely that you will not be promoted if Robin is identified for promotion (and vice versa). That is, in all likelihood, either you will be promoted (and Robin will not), or Robin will be promoted (and you will not).**

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The following passage continues from the previous one you read. Focus on immersing yourself in the situation described below and consider what you might be thinking and feeling, and what you might do. Imagine this:

As part of the consideration process, assessments of each candidate's suitability for promotion are submitted. One person is randomly selected from within the company to make an assessment for each candidate; anyone (even the candidate themselves) may be randomly selected to provide the

assessment. Sufficient relevant information (e.g., who this person is, what their performance is like, how others generally perceive them) will be given to the assessor to make an informed evaluation. This assessment is not the only factor that matters, but it will have some influence over any decisions to promote you (or not).

The both of you learn that, by coincidence, **you and Robin were selected to assess both your own and the other person's suitability for promotion**. In other words, you and Robin will each make two assessments: a self-assessment and an assessment of the other person. Both your assessments will be directly submitted to the promotion evaluation committee and need not be shared with the other person.

Once (and only when) you are ready, please click next to proceed.

Condition 3: high control, conflicting interests

Take some time to read about the following situation. Immerse yourself in it and consider how you might be thinking or feeling in this situation.

You work at a large company that is about to decide on upcoming promotions soon. This year, the company is looking to promote **one** employee only. The company has declared that if it is unable to identify a suitable candidate, then no one will be promoted. **In other words, either a suitable employee is promoted, or no one is promoted.**

You and a coworker, **Robin**, are among the employees under consideration for promotion. You have never met Robin (who is of the same gender and age as you but works in a different department) and learned that both of you have worked at the company for the same amount of time, have similar work performances, and are equally regarded in the company. **Both you and Robin would be happy to receive a promotion.** While a promotion comes with new responsibilities, it is also a recognition of your hard work, a progression of your careers, and comes with increased remuneration and benefits.

While the other candidates have significantly weaker records, **both you and Robin are the only ones who clearly meet the criteria for promotion**. It is obvious to everyone (including yourselves) that you and Robin are frontrunners for promotion. However, given the company's desire to either promote one good employee or no one at all, **it is likely that you will not be promoted if Robin is identified for promotion (and vice versa). That is, in all likelihood, either you will be promoted (and Robin will not), or Robin will be promoted (and you will not).**

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The following passage continues from the previous one you read. Focus on immersing yourself in the situation described below and consider what you might be thinking and feeling, and what you might do. Imagine this:

As part of the consideration process, assessments of each candidate's suitability for promotion are submitted. One person is randomly selected from within the company to make an assessment for each candidate; anyone (even the candidate themselves) may be randomly selected to provide the assessment. Sufficient relevant information (e.g., who this person is, what their performance is like, how others generally perceive them) will be given to the assessor to make an informed evaluation. This assessment is not the only factor that matters, but it will have some influence over any decisions to promote you (or not).

The both of you learn that, by coincidence, **you were selected to assess both your own suitability for promotion and Robin's suitability for promotion**. In other words, you will make two assessments: a self-assessment and an assessment of Robin. Your assessment of Robin will be directly submitted to the promotion evaluation committee and need not be shared with Robin.

Once (and only when) you are ready, please click next to proceed.

Condition 4: low control, corresponding interests

Take some time to read about the following situation. Immerse yourself in it and consider how you might be thinking or feeling in this situation.

You work at a large company that is about to decide on upcoming promotions soon. This year, the company is looking to promote **two** employees only. The company has declared that if it is unable to identify suitable candidates, then no one will be promoted. **In other words, either two suitable employees are promoted, or no one is promoted.**

You and a coworker, **Robin**, are among the employees under consideration for promotion. You have never met Robin (who is of the same gender and age as you but works in a different department) and learned that both of you have worked at the company for the same amount of time, have similar work performances, and are equally regarded in the company. **Both you and Robin would be happy to receive a promotion.** While a promotion comes with new responsibilities, it is also a recognition of your hard work, a progression of your careers, and comes with increased remuneration and benefits.

While the other candidates have significantly weaker records, **both you and Robin are the only ones who clearly meet the criteria for promotion.** It is obvious to everyone (including yourselves) that you and Robin are frontrunners for promotion**.** However, given the company's desire to either promote two good employees or no one at all, **it is likely that you will not be**

promoted if Robin isn't also identified for promotion (and vice versa). That is, in all likelihood, either both of you will be promoted, or neither will be promoted.

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The following passage continues from the previous one you read. Focus on immersing yourself in the situation described below and consider what you might be thinking and feeling, and what you might do. Imagine this:

As part of the consideration process, assessments of each candidate's suitability for promotion are submitted. One person is randomly selected from within the company to make an assessment for each candidate; anyone (even the candidate themselves) may be randomly selected to provide the assessment. Sufficient relevant information (e.g., who this person is, what their performance is like, how others generally perceive them) will be given to the assessor to make an informed evaluation. This assessment is not the only factor that matters, but it will have some influence over any decisions to promote you (or not).

The both of you learn that, by coincidence, **Robin was selected to assess their own suitability for promotion and your suitability for promotion**. In other words, Robin will make two assessments: a self-assessment and an assessment of you. Robin's assessments will be directly submitted to the promotion evaluation committee and need not be shared with you.

Once (and only when) you are ready, please click next to proceed.

Condition 5: equal control, corresponding interests

Take some time to read about the following situation. Immerse yourself in it and consider how you might be thinking or feeling in this situation.

You work at a large company that is about to decide on upcoming promotions soon. This year, the company is looking to promote **two** employees only. The company has declared that if it is unable to identify suitable candidates, then no one will be promoted. **In other words, either two suitable employees are promoted, or no one is promoted.**

You and a coworker, **Robin**, are among the employees under consideration for promotion. You have never met Robin (who is of the same gender and age as you but works in a different department) and learned that both of you have worked at the company for the same amount of time, have similar work performances, and are equally regarded in the company. **Both you and Robin would be happy to receive a promotion.** While a promotion comes with new

responsibilities, it is also a recognition of your hard work, a progression of your careers, and comes with increased remuneration and benefits.

While the other candidates have significantly weaker records, **both you and Robin are the only ones who clearly meet the criteria for promotion.** It is obvious to everyone (including yourselves) that you and Robin are frontrunners for promotion**.** However, given the company's desire to either promote two good employees or no one at all, **it is likely that you will not be promoted if Robin isn't also identified for promotion (and vice versa). That is, in all likelihood, either both of you will be promoted, or neither will be promoted.**

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The following passage continues from the previous one you read. Focus on immersing yourself in the situation described below and consider what you might be thinking and feeling, and what you might do. Imagine this:

As part of the consideration process, assessments of each candidate's suitability for promotion are submitted. One person is randomly selected from within the company to make an assessment for each candidate; anyone (even the candidate themselves) may be randomly selected to provide the assessment. Sufficient relevant information (e.g., who this person is, what their performance is like, how others generally perceive them) will be given to the assessor to make an informed evaluation. This assessment is not the only factor that matters, but it will have some influence over any decisions to promote you (or not).

The both of you learn that, by coincidence, **you and Robin were selected to assess both your own and the other person's suitability for promotion**. In other words, you and Robin will each make two assessments: a self-assessment and an assessment of the other person. Both your assessments will be directly submitted to the promotion evaluation committee and need not be shared with the other person.

Once (and only when) you are ready, please click next to proceed.

Condition 6: high control, corresponding interests

Take some time to read about the following situation. Immerse yourself in it and consider how you might be thinking or feeling in this situation.

You work at a large company that is about to decide on upcoming promotions soon. This year, the company is looking to promote **two** employees only. The company has declared that if it is unable to identify suitable candidates, then

no one will be promoted. **In other words, either two suitable employees are promoted, or no one is promoted.**

You and a coworker, **Robin**, are among the employees under consideration for promotion. You have never met Robin (who is of the same gender and age as you but works in a different department) and learned that both of you have worked at the company for the same amount of time, have similar work performances, and are equally regarded in the company. **Both you and Robin would be happy to receive a promotion.** While a promotion comes with new responsibilities, it is also a recognition of your hard work, a progression of your careers, and comes with increased remuneration and benefits.

While the other candidates have significantly weaker records, **both you and Robin are the only ones who clearly meet the criteria for promotion.** It is obvious to everyone (including yourselves) that you and Robin are frontrunners for promotion**.** However, given the company's desire to either promote two good employees or no one at all, **it is likely that you will not be promoted if Robin isn't also identified for promotion (and vice versa). That is, in all likelihood, either both of you will be promoted, or neither will be promoted.**

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The following passage continues from the previous one you read. Focus on immersing yourself in the situation described below and consider what you might be thinking and feeling, and what you might do. Imagine this:

As part of the consideration process, assessments of each candidate's suitability for promotion are submitted. One person is randomly selected from within the company to make an assessment for each candidate; anyone (even the candidate themselves) may be randomly selected to provide the assessment. Sufficient relevant information (e.g., who this person is, what their performance is like, how others generally perceive them) will be given to the assessor to make an informed evaluation. This assessment is not the only factor that matters, but it will have some influence over any decisions to promote you (or not).

The both of you learn that, by coincidence, **you were selected to assess both your own suitability for promotion and Robin's suitability for promotion**. In other words, you will make two assessments: a self-assessment and an assessment of Robin. Your assessment of Robin will be directly submitted to the promotion evaluation committee and need not be shared with Robin.

Once (and only when) you are ready, please click next to proceed.

Appendix I: Materials for study 3 (questionnaires)

Demographics

"What is your sex"
c. Male
d. Female

"What is your age"

"What is your highest education level?"

"What is your ethnicity"

"Think of this ladder below as representing where different people in America stand. At the top of the ladder are people who are best off—those who have the most money, the most education, and the most respected job prospects. At the bottom are those who are worst off—who have the least money, the least education, and the least-respected or no job prospects. The higher you are on this ladder, the closer you are to the people at the very top; the lower you are on this ladder, the closer you are to the people at the very bottom. Compared to others in America, where would you place yourself on this ladder? Please choose an option below."

Manipulation check (interests)

In the situation described involving yourself and Robin, would you agree that…

Both Robin and I can attain our preferred outcomes
Our preferred outcomes in this situation are conflicting (R)
A good outcome for Robin entails a good outcome for me (and vice versa)

(To be rated on a scale from 1 = *strongly disagree*; 5 = *strongly agree*)

Manipulation check (control)

Who is most in control of the outcomes (of the promotion) in the situation just described? By control, we mean the extent to which someone is able to influence his/her own outcomes and the outcomes of others around them. (To be rated on a scale from 1 = definitely XXX to 5 = definitely me).

Vulnerability to exploitation

"In this situation, it is likely that Robin would exploit me for his/her own gain"
"In the situation, Robin could easily take advantage of me for his/her own interest"
"In the situation I described, I would feel vulnerable to exploitation by Robin"

(To be rated on a scale from 1 = *strongly disagree*, 7 = *strongly agree*)

Cynicism

In the situation just described (and other similar situations)…

1. I think Robin would lie to get ahead
2. Robin would inwardly dislike putting him/herself out to help me
3. Robin would use somewhat unfair means to gain profit or an advantage rather than lose it
4. I would wonder what hidden reason Robin may have for doing something nice to me
5. Robin does not care much what happens to me
6. Robin would be honest chiefly through fear of being caught
7. It would be safer not to trust Robin

(To be rated on a scale from 1 = *strongly disagree*, 7 = *strongly agree*)