

RESEARCH ARTICLE

The virus of distrust: How one victim-sensitive group member can affect the entire group's outcomes

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Abstract

Victim sensitivity (VS) is a personality trait conceptualized as the expectation of being exploited by others. Previous research has shown that one highly victim-sensitive group member can negatively impact the entire group's outcomes. In the present research, we investigate boundary conditions and mechanisms underlying this effect. Study 1 ($N = 134$ individuals, 40 groups) shows that the VS score of the most victim-sensitive group member negatively predicts a group's performance, particularly when the group's collective conscientiousness is high. Study 2 ($N = 135$ individuals, 45 groups) shows that groups that include one (compared to no) victim-sensitive group member perform worse, especially when the task is perceived as requiring mutual trust. Study 3 ($N = 234$) confirms that expressing VS explicitly reduces cooperation within the group. These findings suggest that the virus of distrust can spread quickly and may have detrimental consequences for group performance and intragroup cooperation.

KEYWORDS

cooperation, intragroup processes, trust, victim sensitivity

1 | INTRODUCTION

Trust is the lubricant of effective and efficient group work. Collaboration pays off only if group members can rely on each other's ability and willingness to do their best. Often, one slacker in the group can already jeopardize this arrangement. This is why groups—from informal cliques to work teams, entire organizations, or societies—typically undertake major efforts to secure a high level of commitment to the group and to coordinate group work as efficiently as possible. Yet, even tightly controlled systems cannot exist without a certain degree of mutual trust. If trust erodes, groups have a hard time reaping their benefits (Lewicki & Bunker, 1996; Sitkin & Roth, 1993).

Trust can be defined as 'a psychological state comprising the intention to accept vulnerability based upon positive expectation of the intentions or behavior of another' (Rousseau et al., 1998, p. 395). According to this definition, trust consists of two aspects: a willingness to make oneself vulnerable (motivational aspect) and an expect-

tation about other people's intentions (cognitive aspect). Both aspects are contingent on each other: harbouring positive expectations should facilitate taking the risk of being exploited and vice versa. A particularly toxic combination exists when people (a) are strongly motivated to avoid being exploited and (b) harbour negative expectations about others' intentions. The *state-level* facet of this toxic combination has been labelled 'suspicion' (Kramer, 1994, 1999) or 'suspicious mindset' (Gollwitzer & Rothmund, 2009; Gollwitzer et al., 2013). The *trait-level* (i.e., dispositional) facet has been referred to as 'victim sensitivity' (Gollwitzer et al., 2013, 2015; Schmitt et al., 1995, 2005).

Victim sensitivity (VS) is a personality trait reflecting the habitual tendency to perceive—and emotionally respond to—injustices to one's own disadvantage. People high in victim sensitivity experience more anger and moral outrage as a reaction to experienced or suspected injustice at their own cost (Baumert & Schmitt, 2016; Schmitt et al., 2005) and behave 'pre-emptively' selfish in order to avoid being exploited by others (Gollwitzer & Rothmund, 2011; Gollwitzer et al.,

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2005, 2009; Maltese et al., 2016; for a review, see Gollwitzer et al., 2013). VS is different from general trust in that general trust is conceptualized as a generalized belief in others' benevolence, while VS contains this belief as well as the need to trust others. In other words, high-VS individuals tend to expect untrustworthy intentions from others and are motivated to avoid being the target (Gollwitzer et al., 2013). People high in victim sensitivity are highly aversive toward cues of possible exploitation: When such cues are present, research has shown that VS harms cooperation in a way that cannot be accounted for by individual differences in general trust (Gollwitzer et al., 2009).

So far, most of the research on VS has looked at intrapersonal effects, that is, how victim-sensitive individuals think, feel, and act in interdependent situations. More recent research has started looking at the role that VS plays in intergroup (Süssenbach & Gollwitzer, 2015) as well as intragroup contexts (Gollwitzer et al., 2021). This research has elucidated a bidirectional relationship between VS and negative intergroup emotions (anger, angst) over time: victim sensitivity predicts the experience of negative outgroup-directed emotions in potentially exploitative situations, and these emotions, in turn, predict an increase in VS over time (Süssenbach & Gollwitzer, 2015). Turning to intragroup contexts, Gollwitzer et al. (2021) have shown that solidarity and cooperation within a group are reduced by the victim sensitivity of the most victim-sensitive group member, especially if group-level risk factors (i.e., external stressors) are present and resilience factors (i.e., social identity) are absent.

In interpersonal and intergroup situations, VS thus triggers a process by which, when 'untrustworthiness cues' are present, suspicious cognitions stabilize over time and across social situations (Gollwitzer et al., 2015). Specifically, when a situation is marked by mutual interdependence, that is, when individuals' outcomes are dependent on all group members' actions (e.g., a social dilemma situation; Brann & Foddy, 1987; Dawes, 1980), one team member's VS influences not only this person's own actions and decisions, but also the other members' actions and decisions. In the worst-case scenario, the distrust expressed by the high-VS group member invites distrustful reactions from others, which produces a self-fulfilling prophecy. In a related vein, Kreuzer and Gollwitzer (2021) have recently demonstrated how one partner's neuroticism in a romantic relationship decreases both partners' relationship satisfaction, mediated by both (a) the neurotic target's ('intrapersonal effect') and (b) their partner's maladaptive cognitions (e.g., perceived insecurity or withdrawal; 'interpersonal effects'). Since VS is conceptually related to neuroticism, we hypothesize similar dynamics to occur in intergroup and intragroup contexts. Previous findings have shown VS to have a negative effect on cooperation between and within groups. The present research builds directly upon these findings. In three studies, we aim at elucidating the effect of VS on group outcomes with regard to its boundary conditions and the social-cognitive mechanisms that may underlie it.

Specifically, our research builds on recent findings (Gollwitzer et al., 2021) investigating the effect of 'VS-Max'—the VS score of the most victim-sensitive member in a group—on group members' willingness to cooperate within the group. In two studies (one field and one lab study), Gollwitzer et al. (2021) showed that VS-Max negatively predicted mutual solidarity as well as cooperation within the group. One

highly victim-sensitive member is enough to spark a 'virus' of distrust in the group—notably, the effect of VS-Max (as a group-level predictor) existed even after controlling for individual differences in VS within the group (an individual-level predictor). However, these results do seem to hinge on contextual circumstances. In the first study, that measured VS and solidarity in Philippine villages, the negative effect of VS-Max on solidarity only occurred in a 'time of crisis', that is, when external stressors are present and conflicts of interest are strong in the group (see also Balliet & Van Lange, 2013). In the second study, a small-group lab experiment, task enjoyment, and in-group identification buffered the negative effect of VS-Max on group cooperation. This highlights the relevance of contextual and/or personological moderators, such as the extent to which the group task requires mutual trust or the extent to which group members are dispositionally achievement-oriented, diligent, and conscientious.

Although the two studies reported by Gollwitzer et al. (2021) confirm that one particularly victim-sensitive member can be detrimental to group outcomes, they leave a number of questions open. First, it is unclear whether VS-Max specifically affects *prosocial* behaviours within the group or other group outcomes, too. Research on group dynamics suggests that intragroup trust not only predicts prosocial behaviours towards other group members, but also affects group performance indicators such as creating synergies, finding creative solutions to problems, or showing extra-role behaviour (e.g., Jehn et al., 2010; Jones & George, 1998). In the present research (Study 1), therefore, we explore whether (and when) groups consisting of one highly victim-sensitive member perform worse in a real-life achievement-oriented task than groups without a high-VS member while investigating the interaction with context-relevant personality traits, that is, conscientiousness.

Second, we test the specificity of the process by which victim sensitivity has detrimental effects on group outcomes. According to the conceptualization of victim sensitivity in the literature, individuals high in VS are pre-emptively uncooperative in socially uncertain situations because they become suspicious more easily than individuals low in VS. Other individuals present in the same situation (one's interaction partners) are likely to pick up on this suspicion and become suspicious (and, thus, less cooperative) themselves, which is the 'self-fulfilling prophecy' process mentioned before (Gollwitzer et al., 2015). However, other processes could also lead to worse group outcomes: Instead of a dynamic spread of the 'virus of distrust' in the group, high-VS individuals may simply be regarded as acting strange, annoying, or generally off-putting. Disliking one's group members alone could lead to the negative outcome previously observed (Baldwin et al., 1997). In Study 2, we contrast these options directly by facing groups with two different tasks that require different levels of trust, and in Study 3, we test the hypothesis that individuals who explicitly signal their victim sensitivity to other group members invite less cooperation by their peers more directly. In their studies, Gollwitzer et al. (2021) mentioned this potential mechanism, but never tested it directly. Our third study was designed to do so.

Together, these studies use real and simulated groups to test the consequence of having one high-VS member in a group in a variety of situations. Our findings have real-world implications for how groups

function. Further, this set of studies makes theoretical strides in understanding the process of how an individual-level personality trait such as VS can affect group-level outcomes.

2 | STUDY 1

The first study was designed to test whether (and when) VS-Max decreases group performance in a real-life achievement task. In this study, 'groups' were randomly grouped students enrolled in a mandatory course. Group performance was operationalized as the grade or 'group score' that students received by the two professors who were responsible for the course. As in Gollwitzer et al. (2021), VS-Max was defined as the VS score of the most victim-sensitive group member. We hypothesized that VS-Max negatively predicts the group's performance score.¹ Importantly, each group received only one score (i.e., individual contributions were not assessed individually); thus, our data are analysed at the group level, not at the individual level.

In addition, we measured personality traits to explore whether any of them would moderate the hypothesized group-level effect. We decided to measure the Big Five (neuroticism, extraversion, agreeableness, conscientiousness, openness; Digman, 1990) given that previous research on individual performance (e.g., Barrick & Mount, 1991) and group performance (Kramer et al., 2014; LePine et al., 2011) has used the Big Five model successfully before. Specifically, we expected group-level conscientiousness to moderate the effect of VS-Max on group performance. This reasoning was based on the finding that group-level conscientiousness—the extent to which a group is goal-oriented, hard-working, disciplined, organized, and thorough (Digman, 1990) has been shown to decrease group performance in high-interdependence situations (Kramer et al., 2014), for instance, when group performance strongly depends on the group's weakest (i.e., least motivated or talented) member (Steiner, 1972). Conscientiousness would be particularly relevant in the present situation as it has consistently been associated with academic achievement (Noftle & Robins, 2007; O'Connor & Paunonen, 2007). Although students were not graded on the assignment, it is a task that directly prepared students for a 'real' exam, presenting a challenge in which students could excel but also fail. Furthermore, they were identifiable by their performance both by the instructor and by fellow students. Therefore, discipline and self-motivation are even more pressing.

2.1 | Methods

2.1.1 | Participants

This study took place as part of a small group-work in a mandatory methodology course for first-year psychology students at a German university. The entire cohort (i.e., 152 students) was enrolled in the course. Although the group work was part of the course, participation in the study was completely voluntary and 134 students agreed to participate in the study. Students were randomly assigned to groups of three or four individuals, with 40 groups in total. The mean age of par-

ticipating students was 22 years ($SD = 3.50$, range 19–41); 69% were female.

There was no point in determining the sample size on the basis of an a priori power analysis here because the pool of participants available for this particular field study (as well as the maximum number of groups, i.e., 40) was limited and we intended to assess the entire subject pool. A sensitivity analysis based on a relaxed significance level of 10% (two-tailed test) and a power of 80% showed that the minimum population effect (i.e., the increase in R^2 in a multiple regression model with three fixed effects: VS-Max, conscientiousness, and their interaction effect) would have to be moderate (i.e., $f^2 = .16$) to be detectable with a sample size of $n = 40$. We considered this effect size to be realistic.

2.1.2 | Procedures

The group task assignment took place over 4 weeks. In Week 1, students were introduced to the study and completed the first set of survey measures (survey T1). In Week 2, students had a normal plenary session that included concepts helpful for the task. In Week 3, students were randomly assigned to groups and given the last 45 min of class time to work on the group task. In Week 4, the groups turned in their assignment and completed the second set of survey measures (survey T2), and were debriefed.

2.1.3 | Measures

Task

Students were given a two-page description of a (fictitious) original empirical study (similar to a manuscript that is submitted to a scientific journal) and were asked to identify the five most important methodological errors in that study; instructors were told to not help and answer questions only after the assignments had been turned in. Two methods professors, who were familiar with the task, but not the instructor for any of the seminars, graded all 40 assignments independently on a scale of 1–20 (with 20 being the highest score, comparable to the grade 'extraordinary'); the final grade was then averaged between the two scores. The two independent scorings were highly correlated ($r = .74$; $p < .01$), indicating a high level of agreement between the two professors. Groups received feedback on their performance in the task. The formal grade for the course was an exam that included a similar task to be completed individually at the end of the semester.²

Survey T1 measures

Survey T1 included age, gender, major, semester, nationality, mother tongue, the full 10-item VS scale from Schmitt et al. (2010; Cronbach's $\alpha = .85$; response scales ranged from 0 = 'do not agree' at all to 5 = 'agree completely'), and the 21-item short version of the 'Big Five Inventory' (original version by John et al., 1991; German adaptation by Rammstedt & John, 2005) with the subscales *Extraversion* (four items, $\alpha = .84$), *Agreeableness* (three items,³ $\alpha = .65$), *Conscientiousness*

TABLE 1 Means, standard deviations, and correlations between variables (study 1)

	M	SD	Correlations					
			(1)	(2)	(3)	(4)	(5)	(6)
(1) Group score	14.53	2.75						
(2) VS-max	3.40	0.55	-.09					
(3) Extraversion	3.36	0.58	.13	.08				
(4) Agreeableness	3.17	0.37	-.02	-.30	.47**			
(5) Conscientiousness	3.66	0.35	-.17	.16	.29	-.07		
(6) Neuroticism	3.17	0.48	.16	.16	-.22	.09	.00	
(7) Openness	4.04	0.44	.02	-.36*	.03	.36*	-.21	.17

* $p < .05$.** $p < .01$. $N = 40$ groups.

(four items, $\alpha = .65$), *Neuroticism* (four items, $\alpha = .79$), and *Openness* (five items, $\alpha = .74$). Response scales ranged from 1 ('does not apply at all') to 5 ('applies completely'). Given that our data were analysed at the group level, we computed group-level Big Five scores here as the average of individual levels for each trait scale in the group.

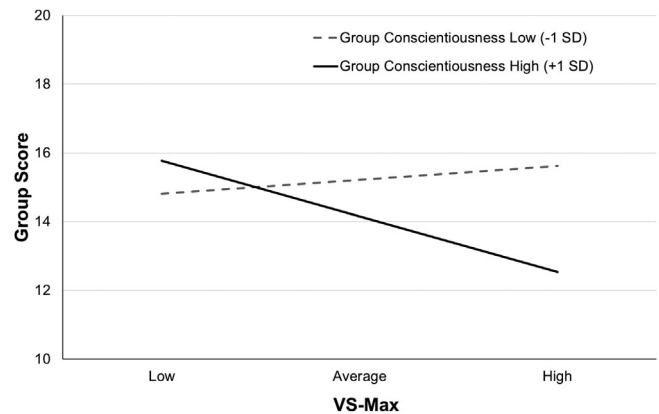
Survey T2 measures

The survey that the students completed after the assignment included questions asking about the participants' general perceptions of the group work. Since these measures were not relevant for our current hypotheses, they are not analysed here; however, they are included and listed in the [Supplementary Online Materials](#).⁴ The primary data necessary to reproduce all results reported here are also accessible there.

2.2 | Results and discussion

The average group performance score (obtained by averaging the two professors' ratings) ranged from 8 to 19.5 points. Descriptive statistics and correlations are reported in Table 1. Contrary to what we expected, the group score was uncorrelated with any of the personality traits measured on the group level, and although the correlation with VS-Max was negative (as expected; $r = -.09$), it was far from significant ($p = .60$).

Moderation analyses were conducted with SPSS PROCESS (Hayes, 2018) for each Big Five trait, respectively. Only one of the traits—conscientiousness—significantly moderated the effect of VS-Max on group score. The main effects of VS-Max ($B = -1.11$, $SE(B) = 0.90$, $p = .22$) and group-level conscientiousness ($B = -1.52$, $SE(B) = 1.25$, $p = .23$) were not significant, but the hypothesized interaction was significant on the specified 10% level ($B = -5.28$, $SE(B) = 2.72$, $p = .061$, 95% CI for $B [-10.81, 0.25]$). This interaction effect explained 9.2% of the variance over and above the main effects, reflecting a medium-size effect. Looking at the conditional effects for groups low (i.e., 1 SD below the grand mean) and high (i.e., 1 SD above the grand mean) in group-level conscientiousness, we find that VS-Max negatively predicted group scores only when group conscientiousness was high ($B = -2.97$, $SE(B) = 1.59$, $p = .070$, 95% CI for $B [-6.19, 0.25]$), but not when it was low ($B = 0.74$, $SE(B) = 0.96$, $p = .45$), see Figure 1. None of the

**FIGURE 1** VS-max × group-level conscientiousness interaction on group score (study 1)

other Big Five traits moderated the effect of VS-Max on group scores (B 's ≤ -3.34 ; p 's $\geq .15$; ΔR^2 's $\leq .055$); see [Supplementary Online Materials](#) for the full results.

3 | STUDY 2

Study 1 confirmed a detrimental effect of VS-Max—that is, the VS score of the most victim-sensitive group member—on group performance for an achievement-orientated task when group-level conscientiousness was high. Notably, the group task was 'real' and meaningful for group members (i.e., first-year students). That said, the design of Study 1 is not optimal because (a) participants potentially knew each other already before the group task started, (b) VS-Max, the central independent variable, as well as the potential moderator variables were measured, not manipulated, (c) the sample was selective (first-year psychology students from one German university) and (d) comparably small (i.e., 40 groups). Moreover, although the study was 'registered' in the sense that it was described in a funding proposal, the specific analytical procedure was not pre-registered.

To address these shortcomings, Study 2 used a pre-registered,⁵ quasi-experimental approach to test whether groups with a member

high in VS perform worse on a group task that requires mutual trust than groups without a member high in VS. Groups were created artificially on the basis of the VS distribution of their members: Participants were assigned to two group types, either a group with a member high in VS or a group without a member high in VS. Group performance was operationalized as the score on the assigned task. Thus, just as in Study 1, the data were analysed on the group level, not the individual level.

As explained in the Introduction, this study aimed to specify the process by which VS affects group outcomes in more detail. Specifically, we investigated whether the detrimental effect of VS on group outcomes would *only* be observed in a task perceived as requiring a high degree of mutual trust among group members or *also* in a task perceived as requiring not a lot of trust among group members. The former would speak for a specific process (i.e., a spread of the 'virus of distrust' in the group); the latter would speak for a more general process (i.e., high-VS individuals are perceived as off-putting and not enjoyable to work with, which can also lead to worse outcomes in the group). Specifically, we pre-registered the following rival hypotheses:

H1: (specific process): Groups with a member high in VS will have worse outcomes than groups with no member high in VS *only* in the task that requires trust (i.e., high interdependence), but not in the task that does not require trust.

H2: (general process): Groups with a member high in VS will have worse outcomes than groups with no member high in VS *both* in the task that requires trust *and* in the task that does not require trust.

For this study, we attempted to keep the task relatively contextual, because past research and Study 1 point to the relevance of the contextual situation in which the task takes place to identify relevant boundary conditions. Instead, we explicitly activate a suspicious mindset among participants through a discussion period. Therefore, unlike earlier studies that highlighted the importance of the relevance of the situation in triggering untrustworthiness cues (Gollwitzer et al., 2015), we did not predict a specific moderator. However, we explored the role of the Big Five and other task relevant variables in this situation as in Study 1.

3.1 | Methods

3.1.1 | Participants

Participants were recruited via university-wide mailing lists and from the participant pool of a university-supported research lab. Participants were compensated 5€ for their participation (those recruited through the research lab received an additional show-up fee of 6€) and an additional 1€–4€ depending on their performance on the tasks. In some cases, participants could receive course credit for participation rather than money for the base fee.

In our pre-registration,⁶ we wrote that we would aim for a target number of 278 individuals for this study. Due to the shutdown of our

research facilities as part of the nationwide COVID 19-related lockdown, we were unable to reach that number. Eventually, we were able to conduct experimental sessions with 135 individuals in total (i.e., 45 groups). Regarding our focal effect (i.e., the mean difference in group performance between the two group types: with vs. without a high-VS member), the population effect would have to be moderate to large (i.e., $d = 0.75$ in a t -test for independent samples) to be detectable with 45 groups on a 5% significance level (one-tailed) with 80% power. The mean age of participating students was 25.48 years ($SD = 6.99$, range 19–63), 63% were female.

3.1.2 | Procedure and materials

This study took place across two parts, first, the group formation phase, followed by the group work phase.

Phase 1: group formation

After obtaining informed consent, participants were guided to a webpage that introduced the study followed by the instruction to enter a personalized code. After that, we assessed participants' age, gender, nationality, educational/work status, mother tongue, the 10-item VS scale from Schmitt et al. (2010; Cronbach's $\alpha = .89$), as well as other exploratory variables listed in the Supplementary Online Materials, including the Big Five. Response scales for all personality items ranged from 0 ('do not agree at all') to 5 ('agree completely'). VS scores were calculated as the average score across the 10 items. As pre-registered, those with a VS score higher than the 83rd percentile (i.e., the 1/6 = 17% participants with the highest VS score in the sample) were categorized as 'VS-high'. More specifically, $n = 23$ individuals with a score of 4.90 or higher (on the 0–5 scale) were assigned to a (three-person) group in which the VS scores of the remaining members were below this cut-off (groups with high-VS member condition); the remaining 22 groups were built so that their average VS scores would not deviate strongly from each other (groups without high-VS member condition). As intended, the average VS score of groups with a high-VS member was higher ($M = 4.36$, $SD = 0.85$) than in groups without a high-VS member ($M = 3.72$, $SD = 0.92$), $t(133) = -4.16$, $p < .001$, $d = 0.72$. Also, after excluding the highest VS score in the 'groups with a high-VS member' condition (i.e., after excluding the VS-high participant from the group), the average VS score no longer differed between conditions, $t(110) = -1.03$, $p = .304$. This supports the notion that the groups were indeed comparable, except for the high-VS member.

Phase 2: group work

Three to 6 weeks after Phase 1, participants received an email with instructions on how to sign up for Phase 2, a pre-determined time slot, and a link to a video conference meeting. Each session was assigned a session number and each participant a member letter (A, B, or C). Before entering the meeting, the moderator changed the user name to their assigned member letter so no personal name appeared. Once all three participants entered the meeting room the moderator introduced the study and obtained informed consent from all participants.

Next, participants were given a question prompt, 'Have you ever experienced a situation where a group task went wrong? Can you tell us briefly about this situation: What exactly went wrong, what was the cause, and how did you personally feel about it?', and told to spend 4 min answering the question with their group. This was done to activate a suspicious mindset among participants. The moderator turns off sound and video for the duration of the discussion to maintain the participants' privacy.

Next, participants completed the first group task designed to require more trust. Here, participants worked independently but were told the group score would be the best score of the three group members (i.e., 'disjunctive task'; Steiner, 1972). This task did not allow participants to see if their fellow group members were working, the intention being that there was an opportunity for free-riding behaviour and the need to trust their fellow group members to work diligently was higher. Participants were given a link to the task and asked to read the following instructions:

The task is similar to the game 'City, Country, River'. The task is to fill in as many blanks as possible for all letters in the following 8 min. The other participants cannot see your solutions. Individual points are awarded for each completed box. In addition, there is a bonus of 15 points for each complete category and a bonus of 4 points for each complete letter. The group result is the result of the member who scored the most points in the round. However, the group score will only be counted if you as a group do at least as well as the average of the participating groups in this study. Therefore, it is important that each group member does his or her best during the task. You do not have to follow a specific order. The boxes marked with a red x do not have to or should not be filled in.⁷

After 1 min, the guide asked if there were any questions. If none, participants were instructed to mute their audio and begin. After 8 min, the task ended.

Next, participants completed a second group task. Here, participants worked together on the same online document, but the group score was based on all the answers given (i.e., 'additive task'; Steiner, 1972). This task allowed participants to see if their fellow group members were working, the intention being that there was less opportunity for free-riding behaviour. In addition, participants were allowed to talk and interact with each other during this second task. The instructions were as follows:

In this round, you are to solve the same task with different categories in the group. In the time allotted, fill in as many categories as possible again for all letters in the following 8 min. Individual points are awarded for each completed box. In addition, there is a bonus of 15 points for each complete category and a bonus of 4 points for each complete letter. You do not have to follow a spe-

cific order when working. You can work on different categories or letters in the group at the same time to score as many points as possible. The boxes marked with a red x do not have to or should not be filled in.⁸

In both tasks, participants were asked to think of a solution for each letter for each category. These tasks represented a good test of our hypothesis because of the opportunity for free-riding behaviour, that is, the possibility that participants might not put any effort into the task. Points were awarded at the end of the allotted time, one point for each acceptable answer and 15 points for each completed category, and 4 points for each completed row. Although we told participants only the highest member's score for the first task would be counted for compensation, for our analysis we computed the group score for the first task by adding the three individual scores.⁹ For the second task, the score was the total on the group sheet. Group scores ranged between 117 to 361 points in the first ('disjunctive') task, $M = 226.07$, $SD = 61.62$, and 56 to 284 points in the second ('additive') task, $M = 167.04$, $SD = 49.00$.¹⁰ Thus, the group scores cannot be directly compared to each other between the two tasks (which is why we will analyse each task, separately).

Survey T2 measures

First participants completed a manipulation check of the two tasks, prompting participants to indicate how much trust was necessary to complete each of the two group tasks (3 items, e.g., 'Trust was important to achieve a good result'; 1 = not at all true, 2 = absolutely true; Cronbach's α 's = .68 and .56 for the first and second task, respectively). Further measures were included in our exploratory analysis (see Supplementary Online Materials).

3.2 | Results and discussion

First, we examined the manipulation check questions. Unexpectedly, participants felt that the first (the 'disjunctive') task required *less* trust ($M = 4.04$, $SD = 1.37$) than the second (the 'additive') task ($M = 4.70$, $SD = 1.05$), $t(133) = -5.44$, $p < .001$, $d = 0.54$. We will come back to this unexpected result in the Discussion, but we will describe the results as they were pre-registered.

To test the hypothesis that groups with a highly victim-sensitive member produce worse outcomes than groups without a high-VS member, two t -tests for independent samples were conducted for both tasks, separately. In the first ('disjunctive') task, there was no significant difference between groups consisting of a high-VS member ($M = 228.43$, $SD = 61.18$) and groups consisting of no high-VS member ($M = 223.59$, $SD = 63.42$), $t(43) = -0.26$, $p = .796$, $d = 0.08$. For the second ('additive') task, groups with a high-VS member performed worse ($M = 152.91$, $SD = 53.02$) than those with no high-VS member ($M = 181.82$, $SD = 40.49$), $t(43) = 2.05$, $p = .047$, $d = 0.61$, (95% CI for d [0.01, 1.21]) (see Figure 2).

Although we expected the first ('disjunctive') task to be perceived as requiring more trust than the second ('additive') task, this was not how

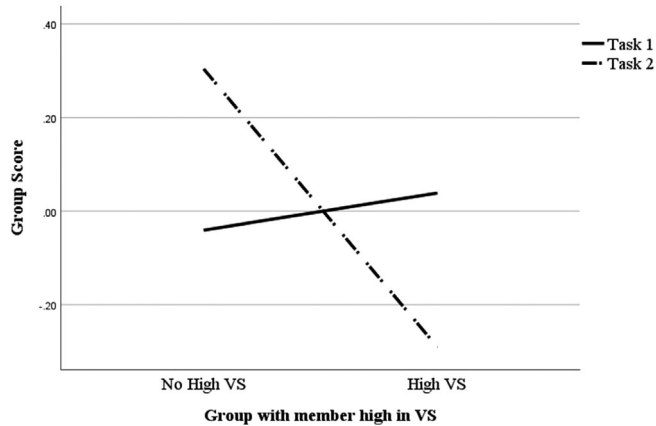


FIGURE 2 Effect of group type on standardized group score for both tasks, separately (study 2)

these tasks were perceived by our participants. In fact, participants perceived the additive task to require more trust than the disjunctive task. We speculate that although participants were told the first task would be scored as a group, they did not experience it as group work; instead, it was the task in which they were actively working as a group that was perceived as requiring greater trust. In addition, the groups only had a short period of communication before the start of the first task; it may have been the added time participants communicated and interacted with each other for the second task that influenced the perception of trust.

In sum, we found evidence for our hypothesis that in a task that was *perceived* as requiring trust, groups with a member high in VS performed worse than groups without a member high in VS. This points to a specific process (i.e., in groups consisting of one high-VS member, mistrust spreads more quickly) rather than a general process (i.e., in groups consisting of one high-VS member, the atmosphere is generally worse and group members are less motivated to perform well). This confirms our theoretical reasoning that the virus of distrust spreads more quickly when ‘...trust is most needed, [but] most difficult to produce’ (Yamagishi, 2011, p. 11).

3.2.1 | Exploratory analysis

In light of the moderating effect of group-level conscientiousness that we found and reported in Study 1, we explored a moderating effect of group-level conscientiousness also in the present study. For the second (‘additive’) task, we did not find an effect of group-level conscientiousness on group score ($B = -0.04$, $SE(B) = 0.35$, $p = .91$), but the VS \times group-level conscientiousness interaction effect was significant on a 10% level ($B = -1.42$, $SE(B) = 0.70$, $p = .050$, 95% CI for $B [-2.84, 0.00]$; see Figure 3). The interaction effect explained 8.2% of the variance over and above the main effects, reflecting a medium-size effect. Looking at the conditional effects for groups low (i.e., 1 SD below the grand mean) and high (i.e., 1 SD above the grand mean) in group-level conscientiousness, we find the expected negative effect of VS (i.e., the experimentally

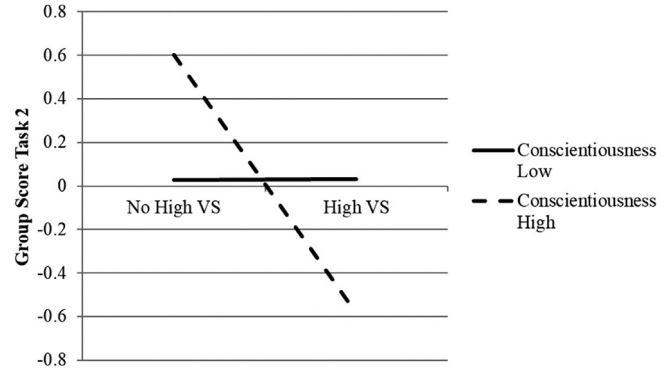


FIGURE 3 Group type \times group-level conscientiousness interaction on standardized group score in task two (study 2)

manipulated presence of one highly vs. no victim-sensitive member in the group) on group score only when group conscientiousness was high ($B = -1.19$, $SE(B) = .41$, $p = .006$), but not when it was low ($B = 0.01$, $SE(B) = 0.41$, $p = 0.99$). No other exploratory findings were significant (see Supplementary Online Materials).

4 | STUDY 3

While Study 2 was designed to illuminate group contexts that lead to high-VS group members’ detrimental effects on group outcomes, Study 3 was conducted to test whether the *explicit* verbal expression of one target’s VS reduces other members’ positive interdependence perceptions for the group and, consequently, their willingness to cooperate with the group (irrespective of their own VS score). Participants were told that they were part of a (virtual) 3-person group whose task was to solve an ‘online riddle’, which was designed as a hidden-profile task (e.g., Toma & Butera, 2009) and developed especially for the present study. Actually, the entire experiment and all interactions with the other group members were pre-programmed; that is, there was no real group context, and all participants completed the study from the same perspective with the same materials. During a first introduction round, one of the other group members (the ‘target’) expressed either a high or a low victim sensitivity—the phrasing of which was carefully aligned with how VS is usually measured (see below). In line with research that defines knowledge sharing as cooperative group behaviour in a social dilemma (Cabrera & Cabrera, 2002; Pais & dos Santos, 2015), we operationalized cooperativeness as the individual decision to share materials that were necessary to solve the riddle with the other group members (binary outcome). Positive interdependence perceptions for the group (the assumed mediator) and participants’ own VS were measured via self-report.

We hypothesized that individuals who are in a group with an explicitly highly victim-sensitive member (high-VS_{target} condition) would react more uncooperatively in a social dilemma situation than individuals who are in a group with a non-victim-sensitive member (low-VS_{target} condition), regardless of the individual’s own VS (i.e., VS_{participant}), and

that this effect would be mediated by individuals' positive interdependence perceptions for the group.¹¹

4.1 | Method

4.1.1 | Sample

Power analysis

Given the binary outcome measure (sharing vs. hiding materials), we based our a priori power analysis on a logistic regression with two predictor variables (experimental manipulation: high- VS_{Target} vs. low- VS_{Target} ; participants' own victim sensitivity: $VS_{\text{Participant}}$) as well as the interaction between the two. Assuming a cooperation rate of 90% in the low- VS_{Target} condition and a still high, yet reduced cooperation rate (85%) in the high- VS_{Target} condition (i.e., an odds-ratio of 0.63; see Kleinbaum et al., 2002), the optimal sample size to detect such an effect with 90% power on a 5% significance level is $N = 433$ (Faul et al., 2009).

Recruitment

This online study was advertised as a research project on 'problem-solving in groups' in various online forums, platforms, social media, and via mailing lists, with the prospect of winning one of 25 online vouchers worth 20€ each in return for a 30-min time investment. Psychology students were not allowed to participate because we considered them unlikely to believe that this would be a 'real' group task. Two other inclusion criteria were: age 18 or older, and proficient German language skills. During the time the study was online (15 May through 8 June 2020), 335 individuals gave their consent to participate, and 234 (i.e., 70%) finished the study and gave interpretable responses to the open questions (see below). This sample size is lower than what we had planned for, but still sufficient to find an odds-ratio of 0.535 (which would correspond to a decrease in cooperativeness from 90% in the low- VS_{Target} to 82.8% in the high- VS_{Target} condition), which we considered reasonable. Inspecting the final sample of $N = 234$, ages ranged between 18 and 78 years ($M = 40.4$, $SD = 15.4$); 165 were female (67 were male, two self-identified as 'other'), and 227 (i.e., 97%) said they would speak German fluently.

The primary data necessary to reproduce all results reported here are accessible in the Supplementary Online Materials.

4.1.2 | Materials and measures

Experimental manipulation

Before the group task began, participants were asked to briefly introduce themselves by responding to the prompt: 'Group tasks can be challenging. Do you have an experience with a previous group that you would like to share with the others?' After participants completed their responses to that question, their (alleged) team members' responses appeared on the screen. One of the other team members told a story about a group project that failed due to a crash of the IT infrastructure. This 'neutral' message was held constant across both experimental con-

ditions. The message of the third team member (the 'target') was experimentally manipulated. In the high- VS_{Target} condition, the target wrote:

Hi! Well, I cannot easily bear it when others profit unilaterally from me. For instance, I had to give a presentation for some clients together with four colleagues. [...] On the day of the presentation, one of my colleagues called in sick and I had to take her part. It will be difficult for me to forget that I had to fix her carelessness! [...] What really bothered me was that I had to work so hard for this, while the benefit of all this came so easily to the others. I was pretty angry that I was treated worse than the others. [...] I just get mad when others receive a reward that I have earned.

This message was designed to reflect the four indicators of victim sensitivity (Baumert & Schmitt, 2016; Schmitt et al., 1995), that is, a high frequency of experienced injustice, an experience of intense anger after experiencing injustice, intrusive thoughts about experienced injustice, and a motivation to redress the injustice. More specifically, the text was constructed by rephrasing and adapting four items from the Victim Sensitivity (VS) subscale of the Justice Sensitivity Inventory (Schmitt et al., 2010: 'I cannot easily bear it when others profit unilaterally from me'; 'It takes me a long time to forget when I have to fix others' carelessness'; 'It worries me when I have to work hard for things that come easily to others'; 'It makes me angry when others receive a reward that I have earned'). By contrast, the low- VS_{Target} condition message was designed to deny each of these indicators of a high victim sensitivity. Here, the target wrote:

'Hi! Well, what I don't like it when others think that I can profit unilaterally from them. For instance, I had to give a presentation for some clients together with four colleagues. [...] On the day of the presentation, one of my colleagues called in sick and I had to take her part. [...] But I wasn't really mad at her - soon after I had already forgotten all about it. I did work really hard for this, and I was a bit disappointed that I was treated slightly worse than the others. But, hey, that doesn't happen a lot. Each group task is different, and when you are steadily committed to what you do, you'll reap the benefits one day.'

Group task and dependent variable

Next, the virtual riddle was explained. Participants were told that their group were 'agents' of a secret intelligence agency and that their task was to 'prevent the outbreak of a global cyber-war' by finding answers to three questions (i.e., 'Who will be responsible for starting the cyber-war?', 'Which event will start this war?' and 'Where does that event take place exactly?'). Each group member would receive two pieces of information ('intelligence'), and the solution would require pooling and arranging the available information in the group so that the answers to the three questions listed above could be logically deducted. Thus, solving the riddle would require sharing one's own information with others. Yet, doing so was costly: each group member received an

initial endowment of six tokens, which counted towards winning a 20€ voucher (see above). Sharing information would cost them two tokens. However, if all group members shared all of their information with the others, each group member would receive a bonus of eight tokens on top. Thus, if participants were the only ones who shared their information with the group, they would end up with two tokens. However, if everybody shared all their information, each group member would end up with $(6 - (2 \times 2) + 8 =)$ 10 tokens. We told participants that the more raffle tickets they ended up with, the higher their chances to win a voucher. In fact, every participant had the same chance of winning the voucher, irrespective of the number of raffle tickets they earned. Thus, knowledge sharing represented a social dilemma: doing so pays off only if the others do so, too (Cabrera & Cabrera, 2002; Pais & dos Santos, 2015), and solving social dilemmas requires interpersonal trust (Brann & Foddy, 1987; Dawes, 1980). Since solving the riddle clearly required sharing *both* pieces of information with the group ($n = 203$), doing so was coded as 'cooperative behaviour', whereas sharing no ($n = 15$) or only one piece of information ($n = 9$) was coded as 'uncooperative behaviour'. Seven participants did not answer the question and were discarded.

Positive interdependence perceptions

The extent to which participants perceived a sense of positive interdependence with their group was assessed with 8 items adapted from previous research (Gollwitzer et al., 2021; e.g., 'I like interacting with my team partners'; 'I can trust my team partners'; 'My team partners are benevolent'; Cronbach's $\alpha = .91$) on a 6-point rating scale ranging from 1 = *not at all* to 6 = *absolutely*.

VS_{Participant}

Participants' own victim sensitivity (VS_{Participant}) was measured with the 10-item VS subscale of the JSI (Schmitt et al., 2010; Cronbach's $\alpha = .88$) on a 6-point rating scale ranging from 1 = *not at all* to 6 = *absolutely*.

4.2 | Results and discussion

We hypothesized that cooperation rates would be lower in the high-VS_{Target} condition than in the low-VS_{Target} condition (irrespective of participants' own VS) and that this effect would be mediated by positive interdependence perceptions. To test the first part of this hypothesis, we inspected the number of participants who cooperated (i.e., shared both pieces of information at a cost to themselves) in each experimental condition. As predicted, cooperation was higher in the low-VS_{Target} condition (106/111 = 96%) than in the high-VS_{Target} condition (97/116 = 84%). This difference was statistically significant, $\chi^2(1, N = 227) = 8.46, p = .004; r = .193$ (95% CI for r [.064, .316]). A moderated logistic regression confirmed this and suggests that the effect of VS_{Target} is independent of participants' own VS score (see Table 2).

Although the interaction effect is not statistically significant on a 5% level, inspecting the predicted values of cooperation at different levels of VS_{Participant} (i.e., low, medium, high) yields an interesting pattern

TABLE 2 Moderated logistic regression predicting cooperation by experimental condition (VS_{Target}), participants' victim sensitivity (VS_{Participant}), and their interaction (study 3)

Predictor	B	SE(B)	Wald's z	p
Intercept	3.474	0.622	5.586	<.001
VS _{Target}	-1.830	0.672	-2.723	.007
VS _{Participant}	0.983	0.450	2.184	.029
Interaction	-0.883	0.519	-1.701	.089

Note: $N = 227$. Nagelkerke's $R^2 = .125$.

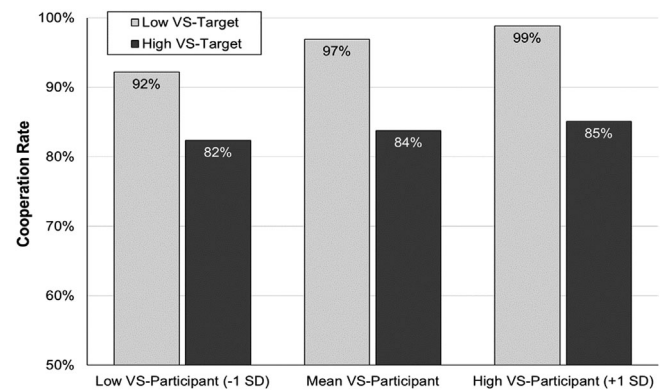


FIGURE 4 Predicted cooperation rates for participants low, medium, and high in VS, separated by experimental conditions (study 3)

(see Figure 4): in the low-VS_{Target} condition, cooperation increased with VS_{Participant} (from 92% to 99%), while this was not the case in the high-VS_{Target} condition. While this is inconsistent with the often reported negative correlation between VS and cooperation (e.g., Fetschenhauer & Huang, 2004; Gollwitzer et al., 2005), it confirms other findings suggesting that high-VS individuals are indeed cooperative as long as the danger of being exploited is low (e.g., Gollwitzer & Rothmund, 2011; Rothmund et al., 2011; Süssenbach & Gollwitzer, 2015), which is the case in the low-VS_{Target} condition.

Finally, we tested whether positive interdependence perceptions mediated the effect of VS_{Target} on cooperation. As expected, positive interdependence perceptions were significantly lower in the high-VS_{Target} condition ($M = 3.77, SD = 1.07$) than in the low-VS_{Target} condition ($M = 4.30, SD = 0.95$), $t(232) = -4.00, p = .001, d = -.52$ (95% CI for d [.26, .78]). Also, as expected, the indirect effect of VS_{Target} on cooperation via positive interdependence perceptions was significant (using bias-corrected bootstrap confidence intervals based on 5000 iterations; Hayes, 2018), $B = -0.45, SE(B) = 0.22, 95\% \text{ CI for } B [-0.97, -0.13]$. The direct effect of VS_{Target} on cooperation was $B = -1.05, SE(B) = 0.54, p = .054, 95\% \text{ CI for } B [-2.12, 0.18]$, suggesting a partial mediation.

Taken together, the findings of this study confirm our hypothesis that in groups consisting of at least one member who expresses high victim sensitivity, perceptions of positive interdependence are weaker

than in groups with no such member, which reduces cooperation rates within the group.

5 | GENERAL DISCUSSION

Across three studies, this article investigates the negative consequences of VS in intragroup contexts. Following previous evidence of the detrimental effect of having one high-VS member in a group (Gollwitzer et al., 2021), the present studies suggest that this effect is most detrimental when the group is high in group-level conscientiousness (Studies 1 and 2) and when the group task is perceived as requiring mutual trust among group members (Study 2). Furthermore, we find that being confronted with a group member who signals his/her victim sensitivity explicitly reduces positive interdependence perceptions and, consequently, group members' willingness to cooperate (Study 3). Together, our findings help illuminate the process by which a single group member's VS can negatively impact the entire group.

The first study reported here replicates the negative effect of VS-Max on an achievement-oriented group outcome (Gollwitzer et al., 2021). Further, this study called attention to the importance of group-level boundary conditions. In groups with a high level of conscientiousness, VS-Max decreased group scores more strongly than in groups with a low level of conscientiousness. In other words, when groups are strongly dedicated to excel (as reflected by a high group-level conscientiousness; Kramer et al., 2014), high-VS group members exert their greatest detrimental influence on the group.

In the second study, we directly investigated the process by which VS spreads in groups by constructing different types of tasks. With this design, we were able to differentiate the spread of distrust from a more general process of disliking within the group. In the task that was perceived as requiring trust among group members, groups with a high-VS member performed worse than those without a high-VS member. Additionally, in our exploratory analysis, we found that group-level conscientiousness moderated this effect: Groups with a high-VS member who were high in conscientiousness performed worse than groups who were low in conscientiousness. This may indicate that the effect of group-level conscientiousness as an amplifier of the negative effect of VS on group performance might be more common than we had anticipated. In Study 2, group-level conscientiousness moderated the effect. Although the study context was less likely to trigger achievement orientation (relative to Study 1), high levels of group conscientiousness might constitute a general group characteristic that enhances the spread of mistrust from high-VS group members to others in the group.

Finally, in the third study, we explicitly looked at the verbal expression of victim sensitivity in a group. In this study, participants were in fictitious groups to increase the experimental control of the VS message given to participants. Through these messages, the seeds of mistrust were planted and the results were as expected: less cooperation compared to the condition in which no VS message was expressed. We

conclude that it is the signalling of the fear of exploitation that spreads mistrust throughout the group.

We also found that the VS message was associated with less positive interdependence perceptions compared to the control condition, which in turn reduces cooperation rates. However, as we did not directly manipulate positive interdependence perceptions in the present study, we cautiously interpret the conclusion of the mediation analysis and acknowledge that other processes might operate here. Further insight from this study points to the feature that participants high in VS are not always uncooperative, as they appeared more willing to cooperate with those who did not show signs of high VS compared to low-VS participants, signalling the importance of who is being cooperated with as a contributing factor to high-VS individuals function in groups.

Of course, the research presented here has limitations. First, the sample sizes: In Studies 1 and 2, the number of groups (i.e., the units of analyses) was relatively small. Additionally, in Studies 2 and 3, we did not reach the planned sample size. Although this is explained in the relevant sections, this is a limitation that we fully acknowledge. However, the fact that we did find statistically significant effects and that these effects were moderate to large in size increases our confidence in the findings obtained here. In addition, the high ecological validity (due to interactions with 'real' others in Studies 1 and 2) is certainly a strength of our studies.

Second, in Study 1 and the exploratory finding of Study 2, the effects reported were only significant on a relaxed type-1 error level of 10%. Nevertheless, in Study 1, the hypothesized VS-Max \times group-level conscientiousness interaction effect explained 9% of the variance in group performance, which can be considered 'practically relevant' and meaningful for applied settings in which building up 'unconditional trust' (Jones & George, 1998) is important to reap collective benefits.

Third, the manipulation in Study 2 did not work as intended, although our conceptual hypothesis—that the virus of distrust spreads more quickly when trust is needed most—was confirmed by the pattern of results. However, it should also be noted that the mechanism, spread of distrust, was inferred from the design. Possibly, the trusting task influenced cooperation by other means such as stronger norms of reciprocal cooperation in the task that required more trust, but also allowed the observation of other group members' contributions in real time. In addition, the lack of communication during the first tasks may have influenced the perceptions of trust. Therefore, future research should include strong experimental designs that can exclude such alternative explanations.

Fourth, most of the participants were recruited from student populations, which may endanger the external validity of our findings. That said, it should be noted that group assignments play an important role in students' lives, and there is no plausible reason to expect that the social dynamics unveiled here are different in other group work contexts, such as teamwork in organizations.

Fifth and finally, it deserves to be mentioned that participants in Study 3 were deceived quite heavily. They completed this study believing that there were two other individuals online at the same

time, with whom they were interacting. This, however, was not the case: the two other players were avatars whose behaviour was fully staged. Of course, participants were fully debriefed after the study was completed, the use of deception was extensively explained, and they were given the opportunity to give feedback to the experimenter in case they would like to comment on the design (which nobody did). And although the degree of deception may be considered relatively strong here, our impression was that the benefits of our design (high efficiency, high experimental control despite the online setting) outweighed the potential ethical side-effects.

Other strengths of our research program were: (1) the group work in Study 1 was 'real', immersive, and meaningful for our participants, confirming the practical relevance of our research for applied group settings; (2) in Study 2, group compositions (based on group members' VS scores) were created carefully to maximize the internal validity of our design and to address shortcomings of prior research; and (3) Study 3 used a direct experimental manipulation of signalling VS in a group, showing that doing so has detrimental effects on the intragroup climate and, consequently, on group members' willingness to cooperate with each other. With these findings, our research complements previous research on VS in groups and offers important insights into how personality characteristics of individual group members can affect entire group outcomes and beings to elucidate the specific process in which this happens.

Future research should further refine what we know about the interaction between situational and personal factors. In the group task of Studies 1 and 2, conscientiousness moderated the effects of VS on group performance. However, past research showed different boundary conditions (Gollwitzer et al., 2021), such as negative interdependence and (low) social identity. Future research should therefore develop a comprehensive framework specifying the boundary conditions under which the hypothesized effect of VS on group performance may or may not occur (or, may be stronger vs. weaker). Furthermore, future research should continue to investigate the signals that are transmitted from high-VS individuals to the group in a more immersive environment to identify how and when the virus of distrust starts to spread and how this spread can be disrupted.

To reap the benefits of group work, groups need to build up trust among their members. But doing so is time-consuming and dangerous, and victim-sensitive group members can disturb this process significantly. Thus, groups need to adopt strategies to buffer the virus of distrust from spreading, for instance, by installing behaviour control strategies, by increasing task enjoyment, or maintaining ingroup identification (Gollwitzer et al., 2021). The present research also suggests that reducing a collective determination to excel in the task and/or reducing the degree of interdependence in early phases of group work may be able to buffer the negative effects of VS in groups on group outcomes and to allow mutual trust to build up—slow and steady, and, hopefully, sustainably.

DATA AVAILABILITY STATEMENT

The study data, materials and scripts used for this article can be accessed at <https://osf.io/kptu3>.

ETHICS STATEMENT

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards.

CONFLICT OF INTEREST

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

AUTHOR CONTRIBUTIONS

Z.M.-M., M.G., and P.S. designed and researched the studies, Z.M.-M. and M.G. analysed the data and wrote a first draft of the article, and P.S. edited and approved the final version of the article.

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NOTES

- The hypothesis was not formally pre-registered for this study but was pre-conceived in the grant proposal.
- We ran a post-study recommend by reviewers to measure the degree of perceived trust for this task in line with manipulation check questions found in Study 2. Thirty students read a description of the task and rate the amount of trust required, using the same scale as in Study 2. We found that, on average, participants in this post-study rated the task as requiring a substantial amount of trust ($M = 4.07$ on a 1–6 scale, $SD = 1.42$); a value that is significantly higher than the theoretical midpoint of this scale (i.e., $M = 3.5$), $t(29) = 2.20$, $p = .04$; $d = 1.42$.
- One item ('I trust others quickly; I believe in the goodness of people') was removed from this scale due to (1) its semantic overlap with the VS scale and (2) a low item-total correlation (.18).
- <https://osf.io/kptu3>.
- <https://osf.io/ay3v4>.
- <https://osf.io/ay3v4>.
- See Supplementary Online Materials for the original German wording of the instructions.
- See <https://osf.io/kptu3> for the original German wording of the instructions.
- This is a deviation from the wording on our pre-registration.
- The number of categories chosen for each task was the result of a pre-test with student assistants that aimed for sufficient variance, that is, enough categories to make it unlikely that a group could finish in the time allotted but not so many that participants would be discouraged. This pre-test resulted in four categories for the first task and nine for the second.
- The hypothesis was not formally pre-registered for this study but was pre-conceived in conjunction with a student project. The student wrote a proposal including the hypotheses and analyses plan (dated 3 April 2020), before the data collection took place (in June 2020).

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