Managing Disclosure Outcomes in Intelligence Interviews

The appendix appears after the references

Author Note

David A. Neequaye, Timothy J. Luke, and Kristina Kollback, Department of Psychology, University of Gothenburg.

This research is funded by a grant from The Lars Hiertas Memorial Foundation (grant nr. FO2019-0053) awarded to David A. Neequaye.

Correspondence to: David A. Neequaye, Department of Psychology, University of Gothenburg. Box 500, 40530 Gothenburg, Sweden; Email: david.neequaye@psy.gu.se

Data Availability Statement: All data supporting the findings in this research will be publicly available on the open science framework repository (osf.io).

Abstract

We introduce the disclosure-outcomes management model. The model views disclosure in intelligence interviews as a behavior interviewees use to profitably navigate self-interest dilemmas. We theorize that interviewees compare the potential outcomes of disclosing to their self-interests. And they evaluate the extent to which disclosure will facilitate or impede those self-interests. That is to say, an interviewee's self-interest dilemma elicits cooperation with respect to some information but not other information. An initial study ($N = 300$) provided preliminary support for the model's predictions. We propose a follow-up study ($N = 300$) to further examine the credibility and generalizability of the model. Participants will assume the role of an intelligence source undergoing an interview. They will decide what information to disclose, contending the typical dilemma in an intelligence interview wherein disclosure could jeopardize or advance their self-interests. The findings will assist in elucidating the mechanisms underlying information disclosure in intelligence interviews.

Keywords: disclosure, intelligence interviewing, information management, self-interest dilemma

Managing Disclosure Outcomes in Intelligence Interviews

Intelligence interviews are social interactions in which a human collector of information—an interviewer—solicits such information from a human source—the interviewee (see also Evans et al., 2010). An intelligence interview aims to obtain information relevant to national or international security, criminal activity, or military operations (e.g., Brandon, 2014). Thus, gathering accurate and useful information from the interviewee is paramount (Hartwig et al., 2014). The present work aims to propose and examine some mechanisms underlying information disclosure in human intelligence (HUMINT) interviews.

A close inspection of the existing literature reveals a considerable focus on interviewers. The majority of the research centers on developing interviewing approaches that improve the amount of information interviewers can elicit (Dawson, 2015; Neequaye, 2018; Oleszkiewicz, 2016). Researchers have focused less on examining the psychological mechanisms that drive interviewees' disclosure. A better understanding of those mechanisms will enhance predictions about the range of influences questioning methods may exert. In that light, we offer a theoretical framework we call the disclosure-outcomes management model.

In the present perspective, intelligence interviewees' disclosure and non-disclosure of information is a form of decision-making, deciding *whether* to disclose. We view information disclosure decisions as a form of self-interest behavior interviewees perform to achieve a preferred result. Thus, the term "self-interest" broadly encompasses any outcome an interviewee may want to achieve or avoid. Those outcomes need not apply directly to the interviewee; they could act in the best interests of other associates.

We draw on subjective expected utility (Savage, 1954) to explain how interviewees decide what they *could* disclose. Accordingly, we propose that interviewees are likelier to disclose information they expect would yield positive versus negative utility, namely, desirable rather than undesirable outcomes. This approach assumes that people consider the potential

outcomes of their behaviors, and they typically enact behaviors intended to maximize personal benefits and incur the least costs (e.g., Tversky & Fox, 1995; Tversky & Kahneman, 1992). This decision-making process does not necessarily correspond to the actual benefits and costs associated with a given decision. The *perceived* benefits and costs influence people's decisions about what information they could disclose.

Past research on suspect interrogation supports our view. Suspects otherwise motivated to conceal information often volunteer details they believe their interviewer may already know (Brimbal & Luke, 2021; Luke et al., 2014; Luke, 2021). That behavior allows such suspects to appear cooperative and reap the corresponding benefits while avoiding the costs of appearing uncooperative. Therefore, we argue that interviewees' cooperativeness through disclosure can be conceptualized as a case of decision-making to achieve desired outcomes at minimal costs.

Navigating Conflicting Goals

Anecdotal evidence about intelligence interviews suggests that interviewees typically face a self-interest dilemma (Soufan, 2011; Toliver, 1997). Interviewees often experience conflicting goals: some desired outcomes preclude other goals or vie for resources with other goals. A core tenet of the present model is this: goals that can be accomplished by disclosing and withholding the same information are often in tension. On the one hand, interviewees aim to offer some level of cooperation. That goal may or may not align with satisfying the interviewer's request for information (or information objective). Importantly, the motive to cooperate usually comes with some material benefit that the interviewee considers advantageous. An example is sharing information that incriminates a narcotic peddling gang to help interdict them, thereby improving community safety. Conversely, interviewees aim to safeguard themselves from risks. Protecting oneself from the gang's reprisal is an example of safeguarding oneself from risks. An interviewee could achieve such a motive by withholding or non-disclosure of information that incriminates the gang.

Intelligence interviewing researchers have attempted to incorporate this goal conflict in their research designs. They typically induce some motivation to cooperate in their experiments (e.g., Dando & Ormerod, 2019; Luke, 2021). Participants assuming the role of mock interviewees receive a two-fold instruction on how to engage with a prospective interviewer. They receive instructions to be cooperative because assisting the interviewer is necessary for some benefit. The participants are also told to be resistant due to the risks of disclosure, for example, having strong ties to a mock terror group. The instruction ensures that participants have identical motivations before researchers examine an interviewing approach's efficacy. Researchers often examine the effectiveness of inducing disclosure by testing an approach against the method of direct questioning.

The two-fold instruction has proven useful; all the participants usually disclose some information. However, the participants do not disclose all of the information at their disposal. For example, (Luke, 2021) reviewed the experimental research of a subtle information elicitation approach—the Scharff technique. Across the studies reviewed, the group means for information disclosure in the direct questioning conditions were always well above zero (Luke, 2021). On average, people interviewed with direct questioning regularly provide at least some of the information they possess. Complete withholding is the exception rather than the rule. Therefore, we can infer that interviewees presumably perceive some benefit with disclosing such information. Or, at least, that disclosure is not necessarily so opposed to their goals that they completely refuse to do it when directly prompted. Put simply, interviewees usually reveal some information when interviewers ask direct questions.

We propose that an interviewee considers how to navigate the conflicting goals of their self-interest dilemma in an interview. This evaluation determines what the interviewee decides to disclose to the interviewer. However, we do not construe such cooperativeness as a property of an interviewee *per se*. Rather, an interviewee's cooperativeness, by providing information,

varies within the individual; the variation occurs between different pieces of information the interviewee holds. That is to say; an interviewee may be likely to cooperate with respect to some information but not other information.

Here the unit of analysis is, therefore, pieces of information nested within interviewees. Interviewees consider how revealing what they know might advance or jeopardize their self-interests. That consideration produces varying likelihoods to disclose each piece of information rather than a global motivation. Interviewees do not have a motivation to cooperate that applies equally to all the information they hold. Instead, an interviewee will be more likely to disclose some pieces of information and less likely to disclose others. Unless stated otherwise, we use the term “disclosure” in relation to a *specific piece of information* rather than the amount of information an interviewee shares. The interviewee possesses some number of information items, and the likelihood of disclosing each piece of information can vary.

The focus on decision-making concerning specific information items differentiates the present perspective from similar models. For instance, the interrogation decision-making model (Yang et al., 2017) also draws on expected utility to theorize about interviewees’ decision-making. Arguably, that model attends to broader level behaviors—decision-making on whether to confess or deny guilt. The disclosure-outcomes management model concentrates on behavior at a lower level: how interviewees choose to reveal specific details, for example, the information a confession or denial contains. Moreover, the current model is not limited to culpability. The model elucidates the mechanisms of disclosure whenever interviewees contend with a self-interest dilemma. Those dilemmas do not always involve an interviewee’s potential guilt, for example, an ordinary citizen informing on a criminal gang.

Considering pieces of information as the primary unit of analysis offers many conceptual and analytic insights. By focusing on lower-level units, we can begin to offer idiographic predictions—hypotheses about the behavior of specific individuals rather than

groups of people. Additionally, we may consider how person-level variables (e.g., personality) might interact with the properties of information to influence that person's likelihood to disclose that information. Such considerations may lead to more sophisticated predictions about behavior.

Some past data speak to the plausibility of our theorizing. An example is a study by Luke et al. (2014) examining the disclosure of guilty and innocent mock suspects. The researchers informed the suspects that their interviewer might hold incriminating CCTV camera footage. The results indicated that the guilty suspects, as opposed to the innocent ones, behaved in two distinct ways. The guilty suspects tended to deny involvement entirely, or they disclosed substantial amounts of accurate information about the activities in question (viz. guilty knowledge) without admitting culpability.

The suspects did not know what exactly the footage might have contained. In this situation, disclosing the guilty knowledge could be beneficial by making the suspect appear cooperative and consistent with the evidence. Alternatively, the disclosure could severely damage the suspect's claim of innocence. Here, the expected consequences of disclosure are both desirable and detrimental, respectively. Luke and his colleagues (2014) found that the distribution of information disclosures formed a bimodal distribution. This finding supports the view that self-interest dilemmas play a significant role in determining interviewees' disclosure. Those who deemed appearing consistent with the evidence a worthwhile pursuit disclosed the guilty knowledge to advance that interest. Conversely, those who wanted to avoid incrimination, no matter what, refrained from disclosing the guilty knowledge. Other studies have produced results similar to the findings of Luke et al. (2014) just described (Brimbal & Luke, 2021; Srivatsav et al., 2019).

In developing this argument, we draw on the well-established notion that people typically prefer to achieve perceived benefits at minimal perceived costs. Disclosure or non-

disclosure is an interviewee's attempt to profitably navigate a self-interest dilemma. We propose that interviewees try to profitably navigate the network of conflicting goals by considering, at least intuitively, what information could be disclosed to advance their self-interests. Favorably navigating the self-interest dilemma is the interviewee's overarching goal. This goal includes (a) satiating the interviewer's information objectives by sharing information to achieve advantages; and (b) the interviewee safeguarding against costs of disclosure. Accordingly, interviewees primarily consider the potential outcomes of disclosure when deciding what information could be shared. We can think of such possible outcomes in terms of their valence: the extent to which the expected outcome is *beneficial or costly to the interviewee*. Improving community safety by sharing useful information about a criminal gang is an example of a possible beneficial outcome. Conversely, reprisal from the criminal gang is an example of a potentially costly outcome. An interviewee may want to avoid reprisal by withholding information that incriminates the gang.

Interviewees pursue their self-interests by instrumentally disclosing information that will foster the likelihood of their overarching goal. In that regard, we posit an interplay whereby interviewees implicitly or explicitly compare the potential outcomes of disclosing to their overarching goal. They then estimate the extent to which disclosure will facilitate or impede the goal (see also Duke et al., 2018; Yang et al., 2017). Therefore, an interviewee's likelihood to disclose an information unit inherently derives from their self-interest dilemma.

Figure 1 illustrates how the valence of expected outcomes influences the likelihood of disclosing information. The illustration depicts interviewees' typical self-interest dilemma involving conflicting goals: the motive to cooperate by sharing an information item while safeguarding against the corresponding risks. The desirable outcome or benefit an interviewee expects from a decision to disclose enhances the interviewee's likelihood to disclose. The undesirable or costly outcome the interviewee anticipates might emerge from that decision

inclines them toward non-disclosure of the information in question.

Thus, our model captures the influence exerted by the expected utilities of disclosure and non-disclosure. The interviewee compares the perceived benefits and costs of *possibly disclosing* what an interviewer is soliciting. The result of that comparison determines the likelihood that the interviewee will utter the information item in question: disclosure and non-disclosure are two sides of the same coin. When the perceived benefits exceed the costs, an interviewee will be more likely to share the information. One will be less likely to disclose when the perceived costs are higher than the benefits.

Figure 1
Overview of the disclosure-outcomes management model

Note. The positive sign indicates an inclination to disclose, and the negative sign an inclination toward non-disclosure. This depiction is not to suggest that the interviewee aggregates the expected utilities of disclosure and non-disclosure into a single expected utility. Rather, a comparison of the utilities determine likelihood that the interviewee will utter the information item.

It is useful to explain how interviewees evaluate the expected outcomes of disclosing information. We have formulated such a conceptualization in qualitative terms: the *magnitude* (viz. low and high) connected to the *valence* (viz. costs and benefits) of an expected outcome. In this conceptualization, there are four possible combinations of expected outcomes. A given piece of information can be associated with one of those combinations—at a specific time point. These four *Information-Types* arise from an interaction between two features of the

interviewee: the characteristics of the distinct pieces of information the interviewee holds and the interviewee's self-interest dilemma. Classifying information into one of these four categories is necessarily a caricature of variables. The classification may be more accurately represented quantitatively rather than categorically. Nevertheless, we believe the benefits of this admitted oversimplification allow enhanced comprehensibility. This advantage currently outweighs the drawback of presumed overgeneralization. Below, we elaborate on each hypothesized type of information that emerges from the described approach.

Low-Stakes Information

The costs and benefits of some expected outcomes can both be low in magnitude. Such an instance could arise when there is no tangible reward to gain for sharing the information, and there is a minimal likelihood of reprisal. If disclosed, these information units have relatively few or unimportant consequences toward profitably navigating the self-interest dilemma. However, we propose that interviewees will refrain from disclosing Low-stakes information to avoid taking unnecessary risks. Such disclosure is not immediately beneficial to navigating the self-interest dilemma but carries potential costs.

Guarded Information

Sometimes, the benefits of revealing a piece of information can be low, while the costs of disclosing it are high. For example, an interviewee might expect no tangible reward for sharing the information, and there is an immediate possibility of reprisal. Here, sating the interviewer's information objectives and the interviewee's self-interests are in direct opposition. The interviewee's principal focus will, thus, be geared toward safeguarding their self-interest, avoiding reprisal rather than satisfying the interviewer's information objectives. The interviewee's navigation of the self-interest dilemma would primarily center on protecting the information. Accordingly, interviewees will tend to be unyielding, making them unlikely to disclose *guarded information*.

Unguarded Information

An interviewee could expect disclosing an information unit to yield a highly beneficial outcome and little to no costly consequences. Such an instance could arise when one anticipates gaining an appealing reward for sharing the information and expects no reprisal in return. Disclosing this type of information ultimately serves one's self-interests. Here, the interviewee will likely navigate the self-interest dilemma in a way that considerably satisfies the interviewer's information objectives. Consequently, interviewees will be maximally likely to assist the interviewer by disclosing *unguarded information* to achieve the desired benefit. Interviewees may volunteer unguarded information, possibly without much or any prompting by an interviewer.

High-Stakes Information

The costs and benefits of some expected outcomes can be both high in magnitude. For example, an interviewee might be anticipating gaining a tangible reward for sharing the information, but there is an immediate possibility of reprisal. These situations elicit a stark conflict between the motives of satisfying the interviewer's objectives and of safeguarding one's interests. Both motives are important, and the interviewee cannot achieve one without seriously damaging the pursuit of the other. The strength of the conflict will likely compel the interviewee to navigate the self-interest dilemma in a way that strongly favors either enacting or evading disclosure (see, e.g., Köpetz et al., 2011). Thus, *high-stakes information* is characterized by a highly variable likelihood to disclose.

Preliminary Study

We conducted a preliminary study for two reasons. To provide an initial test of the procedures purposed to examine the theoretical ideas described above; and to generate data to refine our quantitative predictions. We preregistered the planned sample size and procedures without an analysis plan:

https://osf.io/dksqc/?view_only=04c8b35d17b1481785729a412165f0ab

Method

Participants

We recruited participants (age ≥ 18 years) via a university participant pool and email advertisements. A total of $N = 409$ people clicked the link inviting them to participate. We excluded 109 because they failed at least one memory check or did not complete substantial portions of the experiment. The age range in the final sample ($N = 300$), was 21 to 64 years ($M = 31.6$, $SD = 7.1$, $Mdn = 30$, Missing = 41). They were 67.7% female ($n = 203$), 24.7% male ($n = 74$) and 7.6% preferred not to say ($n = 23$). Participants provided informed consent to the protocol before the experiment and received a full debriefing after.

Procedure and Materials

The procedure was entirely online, and we report only the critical aspects of the protocol in the interests of concision. Later, we provide a link allowing the reader to review this preliminary study as participants experienced it. The present procedure is highly similar to the replication study, which we will report in exhaustive detail. The research adheres to the ethical guidelines of the Swedish Research Council and applicable laws. Participants provided informed consent to the protocol before the experiment and received a debriefing after.

An incentive-compatible procedure allowed us to examine how perceived costs and benefits affect disclosure. The protocol manipulated the points one could earn based on their information disclosure. The instructions told participants that we would compile a leaderboard wherein the top five participants would win approximately 106, 84, 63, 42, and 21 USD, respectively, at the end of the research. As described below, participants received estimates of the potential costs and benefits disclosing information units could attract. However, they did not know, for sure, which information items would be costly or beneficial to disclose. Participants knew that disclosing costly information would detract points and that beneficial

information would earn points. This incentive-compatible structure made the self-interest dilemma and potential disclosure outcomes tangible, aiming to mirror consequential intelligence interviews. Participants had to carefully consider the information to disclose to top the leaderboard and gain the winnings. Indiscriminate behavior left one susceptible to losing the winnings. After data collection, the respective winners received the prizes.

The Source Role. Participants read a background story and instructions to assume the role of an intelligence source. These instructions included conflicting motivations between cooperating with the interviewer investigating a criminal gang (i.e., to assist with their apprehension) and safeguarding oneself from risks of the gang's reprisal. These positive and negative outcomes were represented using a point system described subsequently. Participants received a briefing about the point system in the general instructions.

Information Disclosure Decisions. After receiving the general instructions and background, participants watched a video to better immerse them in the role. An actor portrayed an investigator who explained they were interested in information about the gang described in the background materials.

Participants then read a series of four scenarios presented in random order. We framed each scenario within the broader context of the investigation of the gang. For each scenario, participants made decisions to disclose or not disclose six pieces of information to the investigators. We presented the information pieces in a list, which was randomized per participant. Each piece of information came with a brief narrative description (e.g., the gangsters meet in the woods) and two probabilities: the probability of a positive outcome (presented as "XX% safe") and the probability of a negative outcome ("XX% dangerous"). Disclosing a given piece of information would incur an outcome based on a random process—but based on the provided probabilities. Positive outcomes provided the participant with two points, and negative outcomes detracted two points. If the sum of the probabilities of positive

and negative outcomes did not sum to 100%, the remainder represented neither a positive nor a negative outcome. After each scenario, participants were given an automated update on their new current point total, providing them with feedback on the outcomes of their decisions.

The probability of a negative outcome represents the potential costs of disclosure, and the probability of a positive outcome represents its benefits. We manipulated these probabilities to create the four information-types: unguarded (50% safe, 15% dangerous), guarded (15% safe, 50% dangerous), low-stakes (15% safe, 15% dangerous), and high-stakes (50% safe, 50% dangerous). The six pieces of information in each scenario were a mix of the information-types. The composition of each information-type differed across each scenario, but each information-type was presented six times across the four scenarios. With four scenarios, each involving six disclosure decisions, each participant provided a total of 24 decisions. With $N = 300$ participants, we had a total of 7200 observations.

Next follows two weblinks to illustrations of the procedure we have just described.

- A snapshot of the preliminary study (animated image): <https://osf.io/vxhtj>.
- A full demonstration of how participants experienced the preliminary study: https://samgu.eu.qualtrics.com/jfe/form/SV_ebQV2G7I90nGwu2

Results and Discussion

Visualization. As an initial exploration into the effects of the costs and benefits of disclosure on decision-making, we can examine two visualizations of participants' disclosures (see Figure 2). First, we can examine the number of pieces of each information-type disclosed by each participant (displayed in the top panel of Figure 2). One can see that these frequency distributions clearly demonstrate different shapes for each information-type. Simple visual inspection indicates that the varying levels of costs and benefits combine to produce distinctive patterns of responses across participants.

Second, we can examine the proportion of disclosures for each type of information in

each scenario (up to four proportions per participant per information-type; displayed in the bottom panel of Figure 2). Here, one can see several distributions that are bimodal, with values concentrated at the extremes of the scale. However, the study's design may have exaggerated the bimodality of these distributions. Since some of the scenarios included only a single item from an information-type, in those cases, the only valid values were 0 and 1. That being said, these distributions are highly similar across each of the four scenarios (see <https://osf.io/nyz9s>). Moreover, the distribution of high-stakes information appears to have the most pronounced bimodality. This bimodal distribution is consistent with the hypothesis that high-stakes information leads people toward highly forthcoming or highly withholding approaches, within individuals, at any given decision-point (viz. scenario).

When trying to make sense of these data distributions, consider the non-independence of the disclosure of information units within people. Previous research has rarely explicitly addressed individual differences in the propensity to disclose information or in the sensitivity to costs and benefits of disclosure. The past research that provides data on this issue, as well as the present preliminary study, suggests that there are substantial individual differences, such that people's decisions to disclose one piece of information are correlated with their decision to disclose other pieces (Luke & Granhag, 2022). Considering this correlated structure of hypothetical data leads to useful insights concerning the distributions of disclosed information. If interviewees' disclosure decisions are substantially correlated, at any given time, across interviewees, the distribution of the proportions of disclosed high-stakes information may be bimodal or multimodal.

Figure 2*Information Disclosure in the Preliminary Study*

To understand how this finding could be the case, consider a hypothetical binomial data generation process in which 100 people are each flipping an unfair coin 100 times. Each person's coin is unfair to different degrees, and the outcome of each person's 100 coin flips will be correlated (i.e., the coin landing on tails is predictive of that person's other flips also being tails). If the intra-individual correlations are substantial, the distribution of proportions (or frequencies) of successes may be bimodal (or multimodal, depending on the distribution of unfairness in the coins), since those with coins weighted heavily toward heads will accrue many successes, and those with coins weighted heavily toward tails will accrue many failures.

Following the same principles, substantial intra-individual correlations of information disclosure decisions may lead to bimodal or multimodal distributions of the proportion of

disclosed information. Indeed, previous research on interviewing, including the present preliminary study, has repeatedly observed bimodal distributions of information disclosure (Brimbal & Luke, 2021; Luke et al., 2014; Luke & Granhag, 2022; Srivatsav et al., 2019). However, previous research has not typically used the designs necessary to estimate these within-individual correlations. The present research has a design that addresses this issue (i.e., repeated measures of information disclosure). These correlations can be estimated as random effects in a mixed-effects model. In the present conceptualization, correlations between interviewees' responses can be represented by random intercepts and slopes, reflecting a baseline propensity to disclose information (intercepts) and sensitivities to perceived costs and benefits (slopes). We turn to such an analysis now.

Logistic Regression Modeling. To examine the influence of costs and benefits on decisions to disclose, we tested a series of three logistic regression models:

- 1) A fixed-effects model in which the decision to disclose a given piece of information was predicted from its costs (treatment coded; 0 = low costs, 1 = high costs) and benefits (treatment coded; 0 = low benefits, 1 = high benefit). This model assumed that all observations (i.e., each disclosure decision) were independent, despite the nested structure of the data in which multiple decisions were made by the same people in four scenarios.
- 2) A fixed-effects model in which we added an interaction term for costs and benefits.
- 3) A mixed-effects model in which we added random intercepts for each participant and each unique information item. Additionally, we modeled random slopes for each participant, for costs, benefits, and their interaction.

We compared these models using likelihood ratio tests and by examining AIC values. Each model outperformed the previous, Model 1 (AIC = 7857.72) vs. Model 2 (AIC = 7706.74), χ^2 (1) = 152.98, $p < .001$, Model 2 vs. Model 3 (AIC = 5993.10), χ^2 (11) = 1735.64, $p < .001$.

Thus, we retained the mixed-effects model for interpretation.

Guarded information was not disclosed at significantly higher rates than low-stakes information (i.e., the coefficient for cost is nonsignificant). However, benefits and the interaction of costs and benefits were significant predictors of the decision to disclose information. Unguarded information was disclosed at significantly higher rates than low-stakes information. High-stakes information was also disclosed at higher rates than low-stakes information, but not to the same extent as unguarded information.

The substantial improvement in model fit from the addition of random effects suggests the presence of meaningful individual differences in the propensity to disclose information and the sensitivity to the costs and benefits of disclosure. Indeed, as can be seen in Table 1, the random effect variance for both intercepts and slopes is considerable. In addition to the variance associated with individual people, different items of information vary in their likelihood of being disclosed. This result suggests that extraneous factors exerted substantial influence on people's decisions (e.g., the narrative content of the item, rather than the numerical cost and benefit).

Table 1

Fixed and Random Effects of Costs, Benefits, and their Interaction

Fixed effects		Estimate [95% CI]
Intercept		-4.63 [-3.04, -6.23]
Costs		1.46 [3.59, -0.67]
Benefits		6.33 [8.45, 4.21]
Costs x Benefits		-3.76 [-0.88, -6.64]
Random effects		Variance
Participants	Intercepts	0.892
	Costs	4.141

	Benefits	3.454
	Costs x Benefits	2.912
Items	Intercepts	2.923

The preliminary study's data and analysis code is available here:

https://osf.io/5rbu6/?view_only=1db497ff4e7c4f6cb9d2aeb7c5b177c7

Replication Study: The Present Research

The preliminary study was to determine design feasibility, finetune our hypotheses, and work out an analysis plan for thorough preregistration. This follow-up study will serve as a conceptual replication. Additionally, the follow-up aims to provide insight into the generalizability of the findings thus far. The research design will be similar to the preliminary study. We will maintain the previous instructions telling participants that we will compile a leaderboard. At the end of the research, the top five participants will win the equivalent of 106, 84, 63, 42, and 21 USD, respectively. However, the present study includes variations to improve the research design and examine the generalizability of our predictions.

In the preliminary study, participants' decisions yielded multiple outcomes. They lost points, gained points, or there was no change. However, the primary feedback that recurred throughout the experiment displayed total points only, merging all the consequences of decisions. In more naturalistic contexts, sources can simultaneously experience desirable, undesirable, and neutral outcomes. For example, revealing to investigators the hideout of a criminal gang might *both* advance your goals (e.g., assisting in promoting community safety) and have damaging effects (e.g., contributing to potential retaliation against you).

We will modify the structure of the present study to make participants experience the potential positive, negative, and neutral outcomes simultaneously. The primary feedback will record benefits and costs separately and display them as participants engage with the

experiment. But we will combine those separate values at the end of the study to determine the participant's overall performance—their points for the leaderboard. We believe these modifications will make the multiplicity of outcomes salient.

The pairing of cost-benefit probabilities in the preliminary study was completely random, not minding the background story's plot. The findings indicated that extraneous factors, likely the narrative content, may have influenced decisions. Drawing on the story's plot, some participants may have construed their own estimates of danger and benefit probabilities, apart from the numerical manipulations. Additionally, the composition of information-types differed across each scenario. This aspect may have also contributed to participants construing some scenarios as more or less dangerous than others or more or less beneficial to the ongoing investigation.

We will modify the structure of the background story and the scenarios to prevent the limitations just described. In the current design, the plot indicates information-items that might be more or less beneficial or dangerous to disclose. And those suggestions will align with the numerical cost-benefit manipulations, making the potentially dangerous and beneficial disclosures plausible. Additionally, the scenarios in the background story will each contain an equal amount of the respective information-types.

Another limitation of the preliminary study was the framing of the instructions. Generally, we told participants that they *would* earn or lose points if they disclosed beneficial or dangerous information. In truth, any of those disclosures could yield any of the possible outcomes despite the information's description. The present study's instructions better reflect that the consequences of disclosures will be uncertain. We will tell participants that beneficial or dangerous disclosures *could* earn or detract points (see Appendix).

Method

Participants

We aim to remain with a minimum sample size of $N = 300$ participants (Age ≥ 18 years) after data exclusions. Prospective participants will receive notice of the study via a university participant pool and online advertisements. The preliminary study suggests that this sample size was sufficient to detect the effects of interest; moreover, this sample size is feasible given the resources available to us.

Procedure

Note to reviewers: A Qualtrics link will be provided at the end of this section, allowing reviewers to preview the procedure as prospective participants will experience it.

The procedure will be entirely online, like the preliminary study. Participants will provide informed consent before the research commences and receive a full debriefing when we complete the research.

The Source Role. The study will be introduced as an ongoing investigation of a fictitious criminal gang. Participants will read a background story to assume the role of an intelligence source who has discovered various pieces of information that may be useful to the investigation. Intelligence gathering research often employs background stories to create source roles (e.g., Granhag et al., 2015).

The background story mimics the typical intelligence scenario by including a self-interest dilemma. The source role includes conflicting motivations between cooperating with an interviewer investigating a criminal gang and safeguarding oneself from risks of the gang's reprisal. Providing information to the interviewer may attract reprisal from the gang. However, we included a desirable outcome. Sharing information may assist the interviewer in apprehending the gang members who pose a threat to a close friend's nephew. The gang is presumably threatening the boy to peddle drugs on their behalf at a high school. The close friend brokered an arrangement whereby the source might voluntarily provide information on the gang to the interviewer. The arrangement is ostensibly feasible because the source works

at a café overlooking a park where the gang operates. Hence, the source can gather potentially useful information.

We will include two memory checks to flag and exclude the data of inattentive participants. Appendix 1 contains the background story and the corresponding memory checks.

Potential Disclosure-Outcomes. After reading the background story, participants will be introduced to the potential outcomes of disclosure. Similar to the preliminary study, we will use an incentive-compatible points system (see Hashimzade et al., 2017; Tilman et al., 2015 on incentive compatibility). The instructions will specify the extent to which disclosing an information unit is likely beneficial and costly to the source role. Participants will be told that each unit of information to be later considered for disclosure (e.g., “the gang comprises 10 members”) will come with two probabilities: the probability of a positive outcome (presented as “XX% beneficial”) and the probability of a negative outcome (“XX% dangerous”). Sharing a given information unit incurs weighted random outcomes, positive and negative, based on the provided probabilities.

Positive outcomes reward participants with two “investigation” points, which will be said to represent the extent to which the investigation is successfully proceeding against the gang. Negative outcomes will accrue two “danger” points, representing dangerous disclosures that will contribute to attracting the gang’s retaliation. Thus, the probability of a negative outcome will represent the potential costs of disclosure, and the probability of a positive outcome represents its benefits. We will manipulate these probabilities to create the information-types: unguarded (50% beneficial, 15% dangerous), guarded (15% beneficial, 50% dangerous), low-stakes (15% beneficial, 15% dangerous), and high-stakes (50% beneficial, 50% dangerous).

Our goal is to model the typical intelligence context in which sources could choose to gamble with the costs and benefits of silence. This aspect of the instructions will be two-fold.

We will inform participants that silence in any given scenario could be beneficial. Providing the investigators with no information means the source does not risk potential retaliation by the gang. However, silence allows the gang to thrive, which means the boy will remain in an unpredictable level of danger. As such, silence may lead sources to lose or gain a random number of points.

The *beneficial* information, which is safe to disclose, and the costly information, which is *dangerous* to disclose, will be uncertain. The information-type manipulations indicate the potential outcomes of disclosure, but participants cannot determine beyond any doubt which disclosures will actually incur benefits or costs. Hence, there will be no way to exploit the process. This protocol makes it clear that the most prudent way to behave is to indicate one's true preferences to take ownership of the decision outcomes. Random responses cannot guarantee success or allay the risks.

After the instructions on potential disclosure-outcomes, participants will answer memory checks to assist us in flagging and excluding inattentive respondents. Appendix 2 contains the instructions for the points system and the corresponding memory checks.

Meeting the Interviewer. After the introduction to the points system, the sources will meet the interviewer via a video recording (see Appendix 3). We recorded the video using a first-person perspective. The interviewer talks to the camera as if speaking directly to the viewer. The video allows us to enhance this online research's realism by varying the stimuli formats, keeping participants engaged. The interviewer introduces herself, thanks the source for taking the meeting, and mentions that she is interested in any information the source discovers about the gang. Finally, she indicates that the source is not obligated to provide any information. After the interviewer's briefing, the instructions will reiterate the potential outcomes of sharing information with the interviewer.

Disclosure Decisions. After meeting the interviewer, participants will read three

separate scenarios, each framed within the broader context of the background story. The scenarios will be presented in random order. For each scenario, participants will decide to disclose or not disclose 16 pieces of information to the interviewer. Those 16 units will be an equal mix of the information-types. Hence, each information-type will be presented 12 times in total.

As mentioned, we will present each piece of information with a brief description and two probabilities: for example, *the gang comprises 10 members [15% beneficial, 15% dangerous]*. The instructions will explicitly mention to participants that they are free to choose more than one item or select none of the items if they wish to be silent. After each scenario, participants will receive an automated update on their current points (positive and negative). That update is designed to give them feedback on the outcomes of their decisions. The possibility of earning investigation points or incurring danger points will align with the previously described probabilities corresponding to the respective information-types.

For *unguarded information* (50% beneficial, 15% dangerous), six items will earn investigation points, two items will incur danger points, and four items will have no effect.

Guarded information (15% beneficial, 50% dangerous) will include two information units that will earn investigation points, and six units will incur danger points; four guarded units will have no effect.

High-stakes information (50% beneficial, 50% dangerous) comprise six units that will earn investigation points, and six items will incur danger points.

For *low-stakes information* (15% beneficial, 15% dangerous), two items will earn investigation points, and two items will incur danger points; eight low-stakes items will have no effect.

The narrative for each scenario will come with a list containing the information items to be considered for disclosure. We will randomize the order of the list per participant.

Additionally, we will randomly designate the specific information units that will earn investigation points or incur danger points. We will also use three different randomizations as extra safeguards to eliminate potential item and order effects and to prevent participants from possibly exploiting the process. Appendix 4 contains the scenarios and the code we will use to randomize decisions that will earn or detract points. With three scenarios and 16 disclosure decisions per scenario, each participant will provide 48 decisions. With $N = 300$ participants, we estimate to collect 14,400 observations.

Table 2 provides an overview of the research design. As one can infer from the preliminary study's results, the current procedure protocol is comprehensible to participants. We observed no anomalies in the data. Next follows two weblinks to illustrations of the procedure we have just described.

- A snapshot of the replication study (animated image): <https://osf.io/shrac>.
- A full demonstration of how participants will experience the replication study: https://samgu.eu.qualtrics.com/jfe/form/SV_bK2WawqJlak3wJo

Table 2

Overview of the research design

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
Background story introducing source role and self-interest dilemma.	Introduction of potential disclosure outcomes via the points system.	Via a video recording, the interviewer introduces herself and indicates she is interested in anything the source discovers.	Reiteration of the potential outcomes of disclosure in light of the self-interest dilemma.	Participants make their disclosure decisions across three scenarios. Each information-type will be presented 12 times across the three scenarios.

Analysis Plan

We will test our hypotheses using mixed effects logistic regression modeling. We will

fit a series of models predicting participants' decisions to disclose (or not to disclose) each piece of information. We will fit the following models:

1. A model with the information's costs (0 = low, 1 = high) and benefits (0 = low, 1 = high) predicting the decision to disclose (0 = did not disclose, 1 = disclosed), with random intercepts for each participant and each information item as well as random slopes for each participant for costs and benefits.
2. A model adding the interaction of costs and benefits as a fixed effect, as well as random slopes for this interaction for each participant.

Models will be compared using likelihood ratio tests (significance threshold = .05). We will retain for interpretation the model that best fits the data according to these tests. All examined models will be documented and reported either in the main text or supplemental material. Models will be fit using the *lme4* package (Bates et al., 2018) for R (R Core Team, 2022). Model convergence will be evaluated using the *glmer()* function's defaults, but we will override the defaults to specify that the optimizer will perform 100,000 function evaluations at maximum. If a model fails to converge, it will be removed from consideration for retention and interpretation.

The primary effects of interest are the fixed effects for risk and benefit and the random effects for individual participants. The risk and benefit effects will provide information about the extent of support for the disclosure-outcomes management model. To support the hypotheses, consistent with the preliminary study, the coefficient for benefit should be positive, and the interaction should be negative.

To assess statistical power, we conducted a simulation-based power analysis using the *simr* package for R (Green & MacLeod, 2016). The analysis drew on the preliminary study's results: coefficient for benefits, $b = 6.33$ 95% CI [4.21, 8.45], and a negative interaction between risk and benefits, $b = -3.76$ 95% CI [-6.64, -0.88]. Using our planned sample size of

$N = 300$ participants and using the fixed effects and random effects variances observed in the preliminary study, we examined statistical power for the interaction between risks and benefits under three conditions: (1) with the same effect observed in the preliminary study, (2) with an effect half the size as the previously observed effect, and (3) with an effect equal to the bound of the 95% CI of the original effect that was closer to zero.

Under those three assumptions, we found that this sample size will respectively provide 95% power for $b = -3.76$, 46% power for $b = -1.88$, and 16% power for $b = -0.88$. The present study will have considerable power to detect effects similar in size to the previously observed effects. However, the study will not have adequate power to detect effects that are substantially smaller. Because of this limitation, if the results are nonsignificant, we will not be able to make claims about the absence of theoretically relevant effects.

Internal and External Validity

Investigative interviews usually involve verbal interactions where interviewees self-generate the information items to disclose. In such verbal exchanges, interviewees can provide irrelevant information, lie, or forget about details they would have otherwise disclosed had they remembered. We acknowledge that our proposed study is limited regarding the additional layers of interaction a verbal interview can bring. However, our current focus is to examine the mechanisms underlying what interviewees *choose* to disclose. The present research design allows participants to choose what to disclose and is a prudent design, given our objective.

Studies that have used verbal interviews also include background stories. Those stories guide the coding of verbal interviews by providing predefined criteria of what constitutes legitimate disclosures as opposed to irrelevant ones and lies. Coding verbal interviews can generate new information items that researchers did not anticipate, and we acknowledge that advantage. However, our current goal is to examine the mechanisms of what interviewees choose to disclose, not the generation of new information from background stories.

Additionally, coding breaks down verbal interviews into a list of legitimate items interviewees have disclosed. Our procedure retains the essential aspect of flagging legitimate disclosures and eliminates potential coding errors.

We do not intend to dismiss the psychological realism that verbal interviews can bring. We are simply defending the need to ensure internal validity. At this early stage of examining the mechanisms of what interviewees choose to disclose, it is prudent to exercise maximum experimental control. Nonetheless, our procedure strives to include nuance. For example, an interviewer's verbal and nonverbal reactions might affect interviewees' appraisal of potential disclosure outcomes. Participants will receive the probabilities of disclosure outcomes before disclosure and the consequences of decisions afterward. These aspects of our design generally aim to mimic the appraisal of potential outcomes, such as the perceived positive and negative interviewer reactions. Critically, the current procedure protocol, namely, the substantial prizes at stake, makes the consequences of participants' decisions tangible, not merely imagined.

The results will contribute to understanding how perceived disclosure outcomes, namely, the projected costs and benefits, influence disclosure in intelligence interviews.

Table 3
Study Design Template

Question	Hypotheses	Sampling Plan & Test sensitivity rationale	Analysis plan	Theory that could be shown wrong by outcomes
To what extent do self-interest dilemmas generate the information-types the disclosure-outcomes management model predicts?	<i>Low-stakes information:</i> Interviewees will refrain from disclosing Low-stakes information.	We aim to include a minimum of $N = 300$ participants.	A series of mixed-effects logistic regression models (significance threshold = .05). The model selection will take an additive approach, wherein fixed and random effects are added in progressive steps.	Due to power considerations, the DOM model cannot necessarily be disproven here.
	<i>Guarded information:</i> Interviewees will be unyieldingly unwilling to disclose Guarded information.	Each participant will make 48 decisions, which will provide an approximate total of 14,400 observations in the present study.		The replication study does not have adequate power to detect effects that are substantially smaller than those observed in the preliminary study.
	<i>Unguarded information:</i> Interviewees will be maximally willing to disclose things that have the features of unguarded information	See analysis plan for power calculations.	The risk and benefit effects, and their interaction will provide information about whether the predictions (i.e., information-types) bear out here.	Because of that limitation, if the results are nonsignificant, we will cannot make claims about the absence of theoretically relevant effects.
	<i>High-stakes information:</i> Interviewees are likely to either disclose or withhold the information entirely.		To support the hypotheses, the coefficient for benefit should be positive, and the interaction should be negative.	This research will assist in determining whether the model's tenets are worth pursuing in future research.
	These four predictions are interconnected and will be tested by the benefit coefficient and the interaction term.			

References

- Bates, D., Kliegl, R., Vasishth, S., & Baayen, H. (2018). *Parsimonious Mixed Models* (arXiv:1506.04967). arXiv. <https://doi.org/10.48550/arXiv.1506.04967>
- Brandon, S. E. (2014). Towards a Science of Interrogation. *Applied Cognitive Psychology*, 28(6), 945–946. <https://doi.org/10.1002/acp.3090>
- Brimbal, L., & Luke, T. J. (2021). Deconstructing the Evidence: The Effects of Reliability and Proximity of Evidence on Suspect Responses and Counter-Interrogation Tactics. *Journal of Applied Research in Memory and Cognition*. <https://doi.org/10.1016/j.jarmac.2021.10.001>
- Dando, C. J., & Ormerod, T. C. (2019). Noncoercive human intelligence gathering. *Journal of Experimental Psychology: General*, 149(8), 1435. <https://doi.org/10.1037/xge0000724>
- Dawson, E. C. (2015). *Improving Investigative Interviews: Facilitating Disclosure of Information through Implicit Means* [Graduate Center, City University of New York]. https://academicworks.cuny.edu/gc_etds/900
- Duke, M. C., Wood, J. M., Magee, J., & Escobar, H. (2018). The effectiveness of army field manual interrogation approaches for educing information and building rapport. *Law and Human Behavior*, 42(5), 442–457. <https://doi.org/10.1037/lhb0000299>
- Evans, J. R., Meissner, C. A., Brandon, S. E., Russano, M. B., & Kleinman, S. M. (2010). Criminal versus HUMINT Interrogations: The Importance of Psychological Science to Improving Interrogative Practice. *The Journal of Psychiatry & Law*, 38(1–2), 215–249. <https://doi.org/10.1177/009318531003800110>
- Granhag, P. A., & Luke, T. J. (2018). How to Interview to Elicit Concealed Information: Introducing the Shift-of-Strategy (SoS) Approach. In J. P. Rosenfeld (Ed.), *Detecting Concealed Information and Deception* (pp. 271–295). Academic Press.

<https://doi.org/10.1016/B978-0-12-812729-2.00012-4>

- Granhag, P. A., Montecinos, S. C., & Oleszkiewicz, S. (2015). Eliciting intelligence from sources: The first scientific test of the Scharff technique. *Legal and Criminological Psychology*, 20(1), 96–113. <https://doi.org/10.1111/lcrp.12015>
- Green, P., & MacLeod, C. J. (2016). SIMR: an R package for power analysis of generalized linear mixed models by simulation. *Methods in Ecology and Evolution*, 7(4), 493–498. <https://doi.org/10.1111/2041-210X.12504>
- Hartwig, M., Meissner, C. A., & Semel, M. D. (2014). Human Intelligence Interviewing and Interrogation: Assessing the Challenges of Developing an Ethical, Evidence-based Approach. In R. Bull (Ed.), *Investigative Interviewing* (pp. 209–228). Springer New York. https://doi.org/10.1007/978-1-4614-9642-7_11
- Hashimzade, N., Myles, G., & Black, J. (2017). Incentive compatibility. In *A Dictionary of Economics*. Oxford University Press.
<http://www.oxfordreference.com/view/10.1093/acref/9780198759430.001.0001/acref-9780198759430-e-1516>
- Köpetz, C., Faber, T., Fishbach, A., & Kruglanski, A. W. (2011). The multifinality constraints effect: How goal multiplicity narrows the means set to a focal end. *Journal of Personality and Social Psychology*, 100(5), 810.
- Luke, T. J. (2021). A meta-analytic review of experimental tests of the interrogation technique of Hanns Joachim Scharff. *Applied Cognitive Psychology*, acp.3771. <https://doi.org/10.1002/acp.3771>
- Luke, T. J., Dawson, E., Hartwig, M., & Granhag, P. A. (2014). How Awareness of Possible Evidence Induces Forthcoming Counter-Interrogation Strategies: Awareness of evidence. *Applied Cognitive Psychology*, 28(6), 876–882.
<https://doi.org/10.1002/acp.3019>

- Luke, T. J., & Granhag, P. A. (2022). The shift-of-strategy (SoS) approach: Using evidence strategically to influence suspects' counter-interrogation strategies. *Psychology, Crime & Law*, 1–26. <https://doi.org/10.1080/1068316X.2022.2030738>
- Neequaye, D. A. (2018). *Eliciting information in intelligence interviews through priming: An examination of underlying mechanisms* [Department of Psychology, University of Gothenburg]. <https://gupea.ub.gu.se/handle/2077/57528>
- Oleszkiewicz, S. (2016). *Eliciting human intelligence a conceptualization and empirical testing of the Scharff-technique* [Department of Psychology, University of Gothenburg]. <http://hdl.handle.net/2077/41567>
- Savage, L. J. (1954). *The foundations of statistics* (Second revised edition). Wiley.
- Soufan, A. (2011). *The Black Banners: The Inside Story of 9/11 and the War Against al-Qaeda*. W. W. Norton & Company.
- Srivatsav, M., Luke, T. J., Granhag, P. A., Strömwall, L., & Vrij, A. (2019). What to Reveal and what to Conceal? An Empirical Examination of Guilty Suspects' Strategies. *Investigative Interviewing: Research and Practice*, 11(1). <https://doi.org/10.31234/osf.io/sx4nb>
- Tilman, B., Daniel, K., & Roland, S. (2015). Incentive Compatibility. In *An Introduction to the Theory of Mechanism Design Section: An Introduction to the Theory of Mechanism Design*. Oxford University Press. <https://oxford-universitypressscholarship-com.ezproxy.ub.gu.se/view/10.1093/acprof:oso/9780199734023.001.0001/acprof-9780199734023-chapter-5>
- Toliver, R. F. (1997). *The interrogator: The story of Hans-Joachim Scharff, master interrogator of the Luftwaffe*. Schiffer Pub.
- Tversky, A., & Fox, C. R. (1995). Weighing risk and uncertainty. *Psychological Review*,

102(2), 269–283. <http://dx.doi.org.ezproxy.ub.gu.se/10.1037/0033-295X.102.2.269>

Tversky, A., & Kahneman, D. (1992). Advances in prospect theory: Cumulative representation of uncertainty. *Journal of Risk and Uncertainty*, 5(4), 297–323.

<https://doi.org/10.1007/BF00122574>

Yang, Y., Gyll, M., & Madon, S. (2017). The interrogation decision-making model: A general theoretical framework for confessions. *Law and Human Behavior*, 41(1), 80–

92. <https://doi.org/10.1037/lhb0000220>

Appendices

Appendix 1: Background Story

Imagine that you are one of the workers at a big café in town. Because you have good knowledge about coffee, your duties involve making the coffee drinks customers order. You usually work from 11.00 to 18.00. Although you are not exactly friends with your co-workers, you have a decent working relationship with most of them. Sometimes, you may have small-talk during break times.

The café overlooks a public park close to the woods. You and your colleagues have a good picture of what goes on in the park. It is well known among workers at the café and around town that a gang called SK14 operates there, but no one really discusses this issue. The reason is that SK14 may be a dangerous group with connections everywhere in the city. The gang is suspected to be involved in several drive-by shootings in town, but this is an unconfirmed rumor. What is well known is that the SK14 network carries out various criminal activities. You know that one of SK14's operations is selling narcotics in the park. You have overheard some of your colleagues talk about a special brand of *strong ecstasy* that only SK14 sells.

You have a good friend called Alvi, and you go on bike rides together some weekends. Recently, Alvi informed you that SK14 gangsters have been threatening his nephew, a 15-year-old boy. The gang wants the boy to sell their strong ecstasy at his high school. On a few occasions, some SK14 members have confronted Alvi's nephew on his way home from soccer practice. It seems the gangsters always know where to find the boy. The police have opened an investigation into this case. However, the police have been investigating SK14 for some time before this incident.

Through Alvi, a police-contact arranged a deal with you. Your part in this deal is to continue your work at the café as usual and observe the park when you can. The plan is to meet the police-contact from time to time, and you will discuss anything you may have noticed. An important part of your deal with the police-contact is that **you are not obligated to say anything**. Whatever you decide to tell is totally up to you.

Memory checks

1. Which of these tasks is included in your work at the café?
 - Making coffee (Pass)
 - Take care of electronic equipment at the café (Fail)
2. Which illegal drug is sold by the SK14 group?

- “Strong ecstasy” (Pass)
- Fentanyl (Fail)

Appendix 2: Points-System Instructions

By participating in this experiment, you have the chance to win a cash prize. You can win one (1) of five cash prizes depending on your total compared to the other participants in this research. Whoever completes the study with the most points achieves first place and wins 106 USD. The second, third, fourth, and fifth place winners will win 84, 63, 42, and 21 USD, respectively. If there are ties in any of the five places, the winner of the tied position will be determined via a random draw. Your total points and chance to win any of the prizes to depend on the decisions you make in this section of the experiment. **So, please read the upcoming instructions carefully.**

When you are ready click the next button to continue: <Page break>

You will be placed in three (3) scenarios where you will discover various bits of information about the SK14 gang. At the end of each scenario, you will indicate the bits of information you are willing to disclose to the police-contact. Depending on the situation, some bits of information will be beneficial to disclose. Such information could be potentially useful for investigating and arresting the SK14 gangsters: and this will help protect Alvi’s nephew because the gangsters will not be able to reach him. Other bits of information will be dangerous such that revealing them could attract retaliation from SK14.

- For any **beneficial** bit of information you indicate you are willing to disclose, you could **earn** two (+2) “investigation points”. The more **investigation points** you earn the more likely the investigation against the gang will be successful, leading to their arrest. Then Alvi’s cousin will be safe.
- For any **dangerous** information you indicate you are willing to disclose, you could **incur a tax of** negative two (-2) “danger points”. The more **danger points** you incur, the more likely you are to attract the gang’s retaliation; you know SK14 can be dangerous.

The level of benefit and danger of disclosing each information will be marked next to the information, as in the example below.

There are 10 SK14 gangsters [15% beneficial, 15% dangerous]

When you are ready click the next button to continue: <Page break>

If you disclose a lot of beneficial information, you could earn more “(+) investigation points”. And if you disclose a lot of dangerous information, you could incur more “(-) danger points”.

If you stay silent and give the police-contact *no* information you could reduce the of risk retaliation by the gang. However, staying quiet means the gangsters might not be arrested, which means Alvi’s nephew will be in danger. Therefore, if you remain silent, you may *gain* points to protect yourself or you may *lose* points for putting Alvi’s nephew in danger.

As you can see, there is no way to exploit the process. **The beneficial and dangerous information for each scenario will be randomly determined.** You cannot be absolutely sure what information will be beneficial or dangerous to disclose. **And you do not know what will happen if you stay silent.** So, always indicate the information you are TRULY willing to disclose based on the specific events of each scenario.

When you are ready click the next button to continue: <Page break>

Summary: The points system is quite simple.

- Across three (3) scenarios, you will discover bits of information about the SK14 gang. At the end of each scenario, you will decide the information you are willing to disclose to the police-contact.
- Some information will be beneficial to disclose, and others will be dangerous to disclose.
- If you disclose any beneficial information, you will earn “(+) investigation points”. If you disclose dangerous information, you will incur “(-) danger points”.

- The beneficial and dangerous information will be randomly determined. You cannot be absolutely sure what information will be beneficial or dangerous to disclose.
- Always consider the specific events in each scenario and indicate the information you are TRULY willing to disclose.

When you are ready click the next button to continue: <Page break>

Memory checks

1. What happens if you share **beneficial** information?
 - I could earn “(+) investigation points”. (Pass)
 - I could incur “(-) danger points” (Fail)
2. What happens if you share **dangerous** information?
 - I could earn “(+) investigation points”. (Fail)
 - I could incur “(-) danger points” (Pass)

Appendix 3: Interviewer Script

Hey, I am Kim Johansson. I am a Detective here in town. Thank you for taking the time to meet with me today. As you know, we are still investigating SK14, as well as what happened to Alvi's nephew. So, I am interested in anything you observe in the park. Please remember that you are not obligated to tell me anything. Whatever you are willing to disclose is entirely your choice.

Video: https://osf.io/fd2x4/?view_only=21f4b54d0e994ac5892edddaf4e42d66

Appendix 3.1: Reiterating the potential outcomes of disclosure

Next, you will decide the information you are willing to disclose to the interviewer. There are potential consequences with what you decide to say.

Information items that are beneficial to disclose can contribute to arresting the SK14 gangsters; and this will help protect Alvi's nephew because the gangsters will not be able to reach him. If

a piece of information is highly beneficial to share, there will be a note indicating **50% beneficial** attached to it. Information whose benefit to disclose is low will have a note indicating **15% beneficial**.

Dangerous information items are those that could put you and your colleagues at the café in danger of SK14's retaliation. If a piece of information is highly dangerous to share, there will be a note indicating **50% dangerous** attached to it. Information whose danger to disclose is low will have a note indicating **15% dangerous**.

The level of benefit and danger of disclosing each information will be marked next to the information, as in the example below.

There are 10 SK14 gangsters [15% beneficial, 15% dangerous]

You do not know what will happen if you stay silent: you may gain or lose points. So, always choose what you are TRULY willing to disclose based on the specific events of each scenario. When you are ready click the next button to continue: <Page break>

Appendix 4: Scenarios

Note to reviewers: the additional labels here are to facilitate the review process. The main study will not include explicit labels of the information-types.

Scenario 1

[Low-Stakes] One morning you decided to come to work earlier than usual for some cleaning. You arrived at approximately 08.00, no one saw you come in. While cleaning, you noticed that the SK14 gangsters arrived in a different vehicle – a black SUV rather than their usual minivan. As you paid more attention, you saw that there were seven (7) of them. Three (3) men and four (4) women. They were all dressed in outdoor sportswear, so they looked like anyone else who uses the park.

[Unguarded] Later that morning, around 08.45, you saw that the gangsters were arguing. They still had not noticed you were in the café. Even though you did not hear so clearly, it seemed that they were arguing about selling a high dose of drugs to Alvi's nephew. The gangsters are now worried that the victim's overdose will draw attention from the police. They are thinking of a new location for the drug sales and possibly selling during early mornings only.

[High-Stakes] You had a long lunch break since you came to work early. So, you decided to go for a quick jog through the woods. Just before entering the wooded area, you got distracted and looked away from the path for a brief second. You bumped rather hard into a woman. Both of you were quite shocked by the event, and you paused to get a good look at each other. She was probably in her late twenties, about 165cm tall, and had purple-dyed hair. She fell when you bumped into her, and she dropped a plastic bag spilling the contents. You noticed immediately that the contents were drugs, so you know she must be one of the SK14 gangsters. The drugs were packaged in paper pouches of about 8cm × 8cm. The pouches had a drawing of a horse and the number 160 under the horse.

[Guarded] Just before closing time, one of the new SK14 members came into the café to buy some coffee. You know he is new because, typically, SK14 members stay away from stores in the area. The gangsters do not like their identities to be known – And they can be quite dangerous when it comes to protecting their identity. During the time the gangster placed the order, there was no milk at the counter. So, you asked your colleague to get some milk from the fridge in the back. While you were waiting, you got a good look at his face and stature. And you could tell he was observing you as well. You can guess that he is about 190cm tall. His hair was dark with grey streaks. He had green eyes, and a scar on his left jaw. The name on the card he used to pay for his drink was Kari Jupō.

Information units (Scenario 1)

**Note that the information units will be mixed and presented in random order.*

Low-Stakes

- There were SK14 gangsters in the park around 08.00.
- There were four (4) SK14 gangsters, in the park, who were women.
- There were three (3) SK14 gangsters, in the park, who were men.
- The gangsters seemed to have changed their vehicle from a minivan to a black SUV.

Unguarded

- An argument occurred between some SK14 gangsters around 08.45.
- The gangsters argued about selling a high dose of drugs to Alvi's nephew.
- The gangsters are worried that the recent overdose will draw attention from the police.
- The gangsters are planning to sell their drugs at a new location.

High-Stakes

- One of the SK14 gangsters is a woman in her late twenties with purple-dyed hair.

- SK14 seems to use some kind of standard packaging for their drugs
- SK14 labels the packaging of their drugs with a horse and the number 160
- SK14 packages drugs in paper pouches of about 8cm × 8cm

Guarded

- One of the SK14 gangsters is a man who is about 190cm tall.
- One of the SK14 gangsters has green eyes and a scar on his left jaw.
- One of the SK14 gangsters has dark hair with grey streaks.
- One of the SK14 gangsters is possibly called Kari Jupo.

Scenario 2

[Guarded] You took the bus from the city center to work. When you entered the bus two guys were sitting somewhere in the middle, and they were talking rather loudly. Perhaps, they were drunk. So, you stopped to look, and they saw you too. One of the guys pointed at you and said something to his friend. You sat two seats behind them, but you heard their conversation clearly. The guys were discussing a party they had just attended. They mentioned that the party was organized by the Owl night club. But was held in a private apartment close to the city center, attendance was by invitation only. The guys supposedly got invitations to the party by frequently buying VIP tickets to the Owl night club. They seemed pretty excited about the fact that there was strong ecstasy at the party – You know this drug is sold only by SK14. So, SK14 must be the drug supplier for this party. The guys also mentioned that they've had strong ecstasy at another similar party. So, it seems that SK14 supplies to other private parties in town.

[High-Stakes] During your lunch break, your colleague, who is becoming friends with an SK14 member, slipped you some details. It is not clear how she got the information, but she said that SK14 is connected to a much bigger gang called TETO. TETO operates all over the country and supplies drugs to SK14 and most of the gangs in the country. TETO deals in wholesale narcotics and opioids. TETO prefers to sell to gangs, not individuals. The police need this information because it turns out that Alvi's nephew overdosed on an unknown drug—not oxycodone.

[Low-Stakes] Later that day when the café was very crowded, you noticed that the SK14 gangsters arrived at the park using off-road motorbikes instead of the SUV or minivan they typically use. They arrived around 13.00. You saw that although the gangsters had different

helmets, each helmet had a thick blue line running across it. Two (2) of the bikes had license plates labeled TROY and PECS.

[Unguarded] You have noticed that there seems to be a pattern among the SK14 gangsters when they arrive at the park in the evenings. You realized their pattern when you were in the changing room preparing to go home. Usually, about eight (8) to ten (10) gangsters arrive at a time, just before most of the shops around close. Five of the gangsters enter the woods using the marked entrance 4B. The remaining gangsters then wait near the park benches for about 30 minutes, and they enter the woods using the marked entrance 7E.

Information units (Scenario 2)

**Note that the information units will be mixed and presented in random order.*

Guarded

- SK14 supplies drugs to parties organized by the Owl night club
- SK14 may be the drug supplier for many small private parties in town.
- There was a party at a private apartment in the city center where SK14 supplied strong ecstasy.
- To get an invitation to a party where SK14 provides drugs, one has to buy VIP tickets to the Owl night club.

High-Stakes

- SK14 is connected to a much bigger gang called TETO, which operates all over the country.
- A gang called TETO supplies drugs to SK14 and most gangs in the city.
- TETO is another active gang, which deals in narcotics and opioids.
- TETO is a wholesale drug supplier to small gangs, and they do not like dealing with individuals.

Low-Stakes

- SK14 gangsters arrived at the park at 13.00 on off-road motorbikes.
- SK14 gangsters use helmets that has a thick blue line running across it.
- SK14 gangsters use a motorbike with a license plate labeled TROY.
- SK14 gangsters use a motorbike with a license plate labeled PECS.

Unguarded

- SK14 typically arrives at the park in a group of eight (8) to 10 people.

- When the gangsters arrive at the park, five (5) of them usually enter the woods first after 30 minutes.
- SK14 gangsters enter the woods using the marked entrance 4B.
- SK14 gangsters enter the woods using the marked entrance 7E.

Scenario 3

[Low-Stakes] On your way to work, you noticed something that looked like a black wallet on one of the park benches. You decided to have a look and possibly alert the owner. When you got closer and picked up the wallet, you realized it was not a wallet. The object was a radio communication device that was blue on the front and black on the back. The brand name on the gadget was Motorola, and the serial number was MTX7782R. As soon as you put the device down, it beeped, and a voice said: “A rabbit is on the way.” After about 20 seconds, the same voice said: “No purple carrots for...” You did not hear the end of the sentence because you quickly put the radio down and walked away. You are not sure, but the radio could be owned by SK14.

[Unguarded] While cleaning the café when you arrived at work, you noticed a green pouch of about 6 cm × 4 cm on the floor. At first, you did not pay much attention to the pouch, but as you got closer you noticed the SK14 symbol, the horse and the number 160, on the pouch: You rushed to grab it. Unfortunately, in your haste, you spilled a lot of detergent fluid on your clothes and the floor. You took a moment to gather yourself before reaching for the pouch. As you picked the pouch up, it had gone soft and tore. Two pills fell out; one was red, and the other was white. Both pills had the marking GIP. Before you could grab the pills, they dissolved in the puddle of detergent they fell in.

[High-Stakes] During your break, you went to the nearby restaurant to get lunch. At this restaurant, one orders and pays at the counter. There was a guy right ahead of you ordering his meal. You recognized him immediately: he is an SK14 gangster. You have come across this guy in the park a few times, so he may be familiar with you as well. Previously, you never had the chance to get a good look at him; however, on this day, you did. You remember that this guy is one of the main dealers for teenagers. You recognized that he was wearing an orange sweatshirt you’ve seen him in before. He is about 175cm tall, has Brunette hair, and brown eyes. There is a distinct birthmark around his right eye. He usually hangs around marked

entrance 3D or 8F. You couldn't help but pay close attention to the card he used to pay for the meal. It was not so clear, but the first name on the card was Jari.

[Guarded] There is a garage called Busas close to the woods where you work. After 15.00, when Busas has closed, various motorcyclists use the Busas parking lot, and they ride rather loudly. Lately, the noise has been unbearable, which is driving customers away. Usually, these motorcyclists are young teenagers, so one day, you decided to go tell them to ride somewhere else. Technically, it is illegal to ride in the park after 15.00. As you approached the parking lot, you saw about six motorcyclists. You noticed these people were a bit unusual because their helmets had tinted visors. So, you could not identify who exactly was riding. When you got closer, you saw that all the bikes were grey BMW sports bikes, but there were no license plates. You noticed that one of the riders was an SK14 gangster, his jacket had a symbol of a dragon and a sword on the left breast pocket. He walked up to you and said: "do we have a problem? You better go back to the café!". You said "of course" and walked away.

Information units (Scenario 3)

**Note that the information units will be mixed and presented in random order.*

Low-Stakes

- It is likely that SK14 gangsters use Motorola radio communication devices.
- A code SK14 gangsters use to communicate is possibly: "A rabbit is on the way."
- SK14 gangsters possibly use a radio communication device with serial number MTX7782R.
- A code SK14 gangsters use to communicate is probably: "No purple carrots for..."

Unguarded

- SK14's drugs seem to dissolve quickly when in contact with a detergent fluid.
- SK14 drugs have the marking GIP, and they are colored red or white.
- The size of the green pouches SK14 uses is 6 cm × 4 cm.
- The SK14 symbol (the horse and the number 160) seems to be on every pouch containing SK14 drugs.

High-Stakes

- One of the SK14 gangsters that deals mainly with teenagers is a male of about 175cm with a birthmark around his right eye.
- An SK14 gangster hangs out at marked entrance 8F or 3D and deals to teenagers

- One of the SK14 gangsters is possibly called Jari.
- One of the SK14 gangsters that deals mainly with teenagers is a male who wears an orange sweatshirt and has brown eyes.

Guarded

- SK14 gangsters use the Busas parking lot after 15.00.
- SK14 gangsters own six (6) grey BMW sports bikes.
- SK14 gangsters wearing helmets with tinted visors ride unlicensed motorbikes in the Busas parking lot.
- SK14 motorcyclists wear jackets with a symbol of a dragon and a sword on the left breast pocket.

Code to randomize earnings and losses

The results from the "sample" function on each information-type will be used to assign the effect of the specific pieces of information. For each information-type, the assignment will be made in serial order. Consider the unguarded information-type, for example; if the "sample" results return "gain" first in the list, then the first unguarded information item will increase the endowment, and so forth.

The numbers attached to gain, loss, and null are to ensure that the appropriate amount of gains, losses, and nulls feature in each information-type.

Using the code below, we will create three different randomizations to further eliminate order effects and to prevent participants from possibly exploiting the process. We will use the "set.seed" function to ensure that one can replicate the randomizations.

```
low.stakes <- c("gain.1", "gain.2", "loss.1", "loss.2", "null.1", "null.2", "null.3", "null.4",
"null.5", "null.6", "null.7", "null.8")
```

```
low.stakes.points <- sample(low.stakes)
low.stakes.points
```

```
unguarded <- c("gain.1", "gain.2", "gain.3", "gain.4", "gain.5", "gain.6", "loss.1", "loss.2",
"null.1", "null.2", "null.3", "null.4")
```

```
unguarded.points <- sample(unguarded)
unguarded.points
```

```
high.stakes <- c("gain.1", "gain.2", "gain.3", "gain.4", "gain.5", "gain.6", "loss.1", "loss.2",
"loss.3", "loss.4", "loss.5", "loss.6")
```

```
high.stakes.points <- sample(high.stakes)
high.stakes.points
```

```
guarded <- c("gain.1", "gain.2", "loss.1", "loss.2", "loss.3", "loss.4", "loss.5", "loss.6", "null.1",  
"null.2", "null.3", "null.4")
```

```
guarded.points <- sample(guarded)  
guarded.points
```

```
#no comment gamble for each scenario
```

```
no.comment.gam <- sample(-6:6)  
sample(no.comment.gam, size = 3, replace = TRUE, prob = NULL)
```