Did You See It Coming?: Effects of the Specificity and Efficiency of Goal Pursuit on the Accuracy and Onset of Goal Detection in Social Interaction

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Did You See It Coming?

Effects of the Specificity and Efficiency of Goal Pursuit on the Accuracy and Onset of Goal Detection in Social Interaction

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To test aspects of a theoretical framework on goal detection in social interaction, an experiment examined dyadic initial interactions wherein one participant pursued a goal unbeknownst to another participant. The level of specificity and efficiency at which a pursuer sought a goal interacted to affect the accuracy of the detector's inference as well as the time of onset for that inference. Consistent with hypotheses, efficiency was unrelated to accuracy and negatively correlated with onset latency when pursuers had an abstract information-seeking goal, whereas efficiency was positively correlated with accuracy and onset latency when detecting a concrete (i.e., specific) information-seeking goal. Unexpectedly, efficiency was unrelated to accuracy and onset latency for a midlevel information-seeking goal. Other results focused on the role of individual differences (i.e., perspective-taking and suspicion in others' motives) and perceived communication competence in the goal detection process. A more controlled, second experiment that employed confederates generally replicated results.

Keywords: *goal inferences; tactic; context; message processing; social cognition; interpersonal communication; message production; conversation; accessibility*

Individuals infer the goals (i.e., desired end states) that others pursue in social interaction. Evolution likely made goal detection innate (Bogdan, 1997). In fact, 18-month-old children (Meltzoff, 1995), infants as young as 9 months (Phillips, Baron-Cohen, & Rutter, 1992), and even infant chimpanzees (Uller, 2004) infer goals. Goal inferences can have significant effects. For example, people detect others' goals to explain their behavior (Dillard, 1990; Poynor & Morris, 2003), and accurate inferences foster successful communication (Russell & Schober, 1999; Wilensky, 1983) and narrative comprehension and recall (Lynch & van den Broek, 2007).

Given the significance of goal detection, the current article tests a theoretical framework of the goal detection process in social interaction (Palomares, 2008). Briefly, the framework is rooted in the following ideas: Factors in social interaction are cognitively associated with goals; factors thus increase the accessibility of potentially inferable goals and thereby shape detectors' inferences of another's (i.e., pursuer's) goal. Goal detection is in part a function of detectors' activated goal

linkages in a particular interaction. This article applies the theoretic framework to examine three aspects of goal detection: (a) How the efficiency and specificity of goal pursuit affect detectors' accuracy and onset latency of goal inferences, (b) how individual differences of pursuers and detectors relate to accuracy and onset, and (c) how detectors' accuracy correlates with judgments of detectors' and pursuers' interpersonal communication competence. As such, the following explicates the general assumptions and principles of the theoretical framework. Next, two experiments test predictions stemming from the framework by employing dyadic interactions wherein one member pursues a particular goal unbeknownst to the other member (who detects the pursuer's goal). Finally, the framework is discussed in light of the findings.

Theoretical Framework

People typically pursue a single primary goal in an interaction with the potential for multiple secondary goals (Dillard, 2004; Wilson & Feng, 2007). Primary goals are central to and define an interaction (e.g., persuade, seek information, comfort), whereas secondary goals (e.g., be polite) are constraints that recur across and do not define an interaction (Dillard, Segrin, & Harden, 1989). Likewise, individuals can realize that a pursuer may have secondary goals; yet, a detector's goal inference typically highlights a pursuer's primary goal (Palomares, 2008). People frequently use a single dispositional reason to explain others' behavior, rather than multiple dispositional and situational causes (Heider, 1958). Whereas people typically invoke complex, multiple reasons for their own behavior, causal reasoning for others' behavior is more simplistic and typically draws on a single reason (Fiske & Taylor, 2008). Individuals also tend to infer others' behavior is due to unchanging reasons across situations, but explanations for their own behavior are dynamic and unpredictable (Sande, Goethals, & Radloff, 1988). People rely on a quick and simple heuristic-based answer to preserve cognitive energy, rather than expending much effort to reach a complicated account (Macrae, Milne, & Bodenhausen, 1994; Tversky & Kahenmen, 1986). Based on this work, the theoretical framework maintains that goal inferences generally underscore another's pursuit of a single, primary goal, as opposed to multiple goals.

As a conversation unfolds, goal inferences evolve with varying levels of certainty. Problematic messages encourage people to accumulate information to reach an accurate understanding with greater certainty (Hewes, 1995). Uncertainty reduction affects how social interactions progress (Berger, 1986; Bradac, 2001). People rely on initial information in conversation to infer a goal even if done tentatively (Craig, 1986; Tracy, 1991). Goal detection is dynamic, and any given inference can vary in its definitiveness (Berger, 2007). Definitive goal inferences usually require a significant amount of time and information (Palomares, 2008). In fact, depending on

the circumstances, multiple interactions may be necessary for people to reach a high level of confidence, or they may be noncommittal and simply take a wait-and-see attitude regarding an inference that is possible but nonetheless questionable. At other times, however, a goal inference can occur spontaneously (i.e., implicitly; Hassin, Aarts, & Ferguson, 2005) without any certainty judgment. In such instances, an inferred goal would be outside conscious awareness although it may have the potential to be accessed in explicit thought (see Dik & Aarts, 2007). Goal inferences thus occur throughout interactions tenuously or otherwise.

Two concepts are essential to the goal detection process—the accuracy and onset of a goal inference—and so the explanatory mechanism focuses on them. Just as the accuracy of discourse comprehension fluctuates (van Dijk & Kintsch, 1983), goal inferences vary in their accuracy (Berger, 2000). Inference accuracy is not a dichotomy but rather a continuum ranging from inaccurate to accurate. For example, when a goal detector interacts with someone who is pursuing an obtain-personal-information goal, he or she can infer a get-to-know-you goal which would be highly accurate; but inferring a learn-background-information goal would be moderately accurate; and inferring a persuasion goal would be highly inaccurate. Goal detection accuracy, in other words, is the extent to which a detector's inference conceptually matches or is isomorphic with the pursuer's true goal. Important, however, is that accuracy does not imply a necessary level of certainty for a goal inference, as the two are independent (Palomares, 2008). Whatever the level of accuracy or certainty for a goal inference, its initial onset or inception can occur at any given time during an interaction. A goal inference may occur at the start of an interaction or even before in the case of expected encounters or after in instances of post hoc realizations. Inference onset is the initial moment when a detector infers a particular goal. The greater the onset latency, the more time a detector takes to generate a goal inference.

At its core, the theoretic framework maintains that goals are linked to factors. *Factors* are components of social interaction that provide meaning, interpretability, and structure (Palomares, 2008). Factors have objective and subjective counterparts. In other words, factors are elements of external reality that have corresponding mental representations. Factors thus are susceptible to perceptual influences and can be idiosyncratic at times. Yet, basic categories of factors are mutually held by social actors, and people have similar mental representations of factors, particularly if they are from similar speech communities (Aarts & Dijksterhuis, 2000; Berger, 2005, 2007; Coulmas, 1981). Likewise, most interactions will contain at least the same class of factors, whereas specific instances of any given factor tend to vary across interactions. Factors can be contexts, tactics, relational types, perspectives, and other aspects of interaction. For example, an initial interaction is a context factor, whereas a self-disclosure is a tactic factor. Factors are akin to features (Greene, 1997; Meyer, 1997; Wilson, 1990), cues (Berger & Kellermann, 1994), concepts (Schank & Abelson, 1977), and dimensions (Cody, Canary, & Smith, 1994). Any given factor

can be linked to (i.e., cognitively associated with) any given goal because of their frequent and consistent coactivation in interaction (Bargh & Barndollar, 1996; Bargh & Gollwitzer, 1994; Fitzsimons, Shah, Chartrand, & Bargh, 2005). When a factor triggers (implicitly or explicitly) its mental representation, any cognitive associations among the factor and goals (henceforth, *factor-goal linkages*) are also accessed (Palomares, 2008). Factor-goal linkages parallel cognitive rules (Wilson, 1990) and procedural records (Greene, 1997). For example, one type of factor-goal linkage is a context-goal linkage that could associate a restaurant context with an order-food goal (Schank & Ableson, 1977), whereas a promise tactic is connected to an enforce-obligation goal via a tactic-goal linkage (Wilson, 1990). Restaurants thus increase the accessibility of an order-food goal, and promises activate an enforce-obligation goal.

Because factors activate linked goals, factors are diagnostic of the goals individuals pursue (Palomares, 2008). For example, due to associations among factors and goals people tended to pursue highly accessible goals relative to less accessible goals (Wilson, 1990). Given their diagnostic value, factor-goal linkages affect goal inferences by producing *goal inference restrictions* or limitations that determine what goals might be inferred (Palomares, 2008). Goal inference restrictions narrow the range of inferable goals. For example, a factor that maximally restricts potential inferences to one goal increases the possibility that the goal will be inferred (compared to less restrictive factors with multiple goals linked). The magnitude of the restrictions depends on the strength of factor-goal linkages and the number of goals they activate: When a factor is triggered, any linked goals become accessible; the stronger the association among the factor and goals, the more accessible the goals become. Activating a mother–child relational type, for example, heightened the accessibility of goals linked to that factor (e.g., succeed in school) more than a friendship did; a mother–child relational type thus led to inferences of a succeed-in-school goal (Fitzsimons & Bargh, 2003). As the number of strongly linked (and thus highly accessible) goals decreases, the greater (i.e., more narrow) the inference restrictions become.

Relatively narrow goal inference restrictions foster the early onset of accurate goal inferences. Accuracy rises as inference restrictions shrink to include only the true goal. This constriction increases the probability that a detector will infer a pursuer's true goal because only that goal would be strongly accessible. For example, people were more likely to infer the true goal based on a factor solely linked to that goal than when confronted with a factor strongly linked to the true goal plus two others (Palomares, 2008). Goal inference restrictions also affect the onset of a goal inference: As factors increasingly restrict potential inferences, onset latency decreases because this narrowing reduces the number of accessible goals to a sufficiently limited set from which a detector can generate an inference. Rapid restriction leads to an inference more quickly than slow restriction. Anchored in this framework, the following explains and tests how the linkages of context and tactic factors to goals

(via the specificity and efficiency of goal pursuit, respectively) affect the accuracy and onset of goal inferences in social interaction.

Experiment 1

The efficiency with which a pursuer strives to achieve a goal can affect the accuracy of a detector's goal inference, as well as its onset latency. Efficiency is the level of expediency with which a pursuer strives to achieve a goal (Kellermann & Shea, 1996). Efficient pursuit is direct, to the point, persistent, and effortless. As efficiency increases, pursuers waste less time and use a more rapid succession of direct tactics to achieve a goal. Increases in efficiency thus strengthen the linkages between a pursuer's true goal and tactic factors. As a result, escalations in efficiency generate tactic-goal linkages that increasingly restrict potential inferences to the pursuer's true goal, which increases the likelihood that a detector will accurately infer that goal. In fact, Palomares (2008) found that tactics highly efficient for a particular goal led to inferences of the linked goal more than relatively inefficient tactics for that goal. Efficient goal pursuit can also affect onset latency. Because efficiency quickly narrows inference restrictions, the amount of time for a detector to activate a small set of goals decreases as efficiency increases. Thus, because efficiency restricts potential inferences quicker than inefficiency does, an upsurge in the efficiency of goal pursuit will reduce the onset latency of a detector's goal inference.

Goal specificity affects the accuracy and onset latency of goal inferences as well. Goal specificity is the level of detail or precision at which a pursuer sets a goal (Dillard, 1997; Locke, Shaw, Saari, & Latham, 1981). For example, the abstract goal of obtain personal information is less specific than a midlevel goal of obtain views on politics or religion; yet this midlevel goal is less concrete than a specific goal of obtain reasons for having a political or religious affiliation. Goal specificity impacts accuracy and onset latency because it can modify cognitive associations between a pursuer's goal and a context factor. Thus, to explain how specificity affects accuracy and onset, the context and type of goal must be known to assess: (a) the strength of the linkages between the goal and context and (b) the likelihood that the inference restrictions contain the true goal. The current research employed initial interactions as the context factor and the previous information-seeking objectives with different levels of specificity as the goals because they provided the needed variation in the strength of context-goal linkages. Whereas the theoretical framework for goal detection is broad in its purview (e.g., it has the potential to account for goal detection is various contexts), its current application is limited to information seeking goals in initial interactions. Implementing a relatively general and abstract conceptualization in a much more focused way thus might give the somewhat misleading perception that the logic of the rationale is confined to information

seeking among unacquainted individuals. To the contrary, the following emphasizes information seeking in initial interactions to employ rather concretely an otherwise general theoretical framework.

The abstract obtain-personal-information goal frequently occurs in initial interactions (Berger & Kellermann, 1994). Information seeking focused on religion or politics is less frequent in initial interactions, however (Kellermann, 1995; Kellermann & Palomares, 2004). In initial interactions, obtaining personal information is more common than obtaining political or religious views, and obtaining political/religious views is more frequent than obtaining reasons for holding a certain political/religious affiliation. Given such differences in the co-occurrence of the goals and the context factor, initial encounters are strongly linked to an obtain-personal-information goal, moderately linked to learning religious or political views, and weakly linked to finding reasons for a religious or political affiliation. As a result, the inference restrictions that an initial-interaction context generates would almost always include seek personal information, but they would be moderately likely to include seek political/religious views and relatively unlikely to include seek reasons for political/religious affiliation. Based on the theoretical rationale, as a pursuer's goal moves from abstract- to mid- to specific-levels of specificity, the accuracy of a detector's goal inference would decrease, whereas its onset latency would increase.

Taking into account either efficiency or specificity alone, however, is not enough. The influence of efficiency is a function of goal specificity because specificity alters the diagnostic utility of the pursuer's tactics. The following explains how goal specificity moderates the effects of the efficiency of goal pursuit on accuracy and onset latency.

The Interaction of Efficiency and Specificity

The level of efficiency at which a pursuer strives to achieve an abstract information-seeking goal (i.e., obtain personal information) in an initial-interaction context affects the onset latency of a detector's inference but not its accuracy. The interplay between the context factor and efficiency (via tactic factors) and specifically the inference restrictions they each generate explain these unique effects. Because initial interactions are strongly linked to the abstract information-seeking goal, the context will restrict potential inferences to the true goal. Thus, whatever the level of efficiency, because the context alone can adequately narrow the set of inferable goals to the true goal, the context renders any diagnostic information from the tactic-goal linkages somewhat superfluous. As a result, a pursuer's efficiency will be unrelated to a detector's inference accuracy when the pursuer's true goal is abstract. On the other hand, a pursuer's efficiency affects the onset latency of a detector's inference. Efficient goal pursuit quickly restricts potential inferences to the true goal, whereas a low level of efficiency takes much more time to generate restrictions that include

the true goal. Thus, elevations in efficiency reduce the amount of time it takes a detector to infer an abstract goal in an initial interaction. Inefficiency can even produce restrictions to goals that are incompatible with the initial-interaction context's restrictions, which will also delay an inference. The first set of hypotheses is

Hypotheses 1-2: When pursuers strive to achieve an abstract information-seeking goal in an initial interaction, pursuers' efficiency is negatively correlated with detectors' onset latency (H1), but efficiency is not correlated with detectors' accuracy (H2).

Unlike the abstract goal, the midlevel information-seeking goal (i.e., obtain political or religious views) is moderately linked to an initial-interaction context. As a result, the context only provides modestly adequate diagnostic information relevant to that goal, which renders any diagnostic information from efficiency (via tactic factors) germane to accuracy. Palomares (2008), for example, demonstrated that in an ambiguous context detectors tended to infer a goal based on an efficient tactic because the tactic's linkages provided narrower inference restrictions than the context provided. When a pursuer strives to achieve the midlevel goal in an initial interaction, increases in efficiency progressively restrict potential inference to the true goal. High levels of efficiency, therefore, will increase accuracy because the initial-interaction context alone cannot sufficiently restrict the set of inferable goals to the true goal. Efficiency, however, will not reduce onset latency for the midlevel goal, as it does for the abstract goal. Rather, efficiency will increase a detector's onset latency because highly efficient tactics generate inference restrictions that are incompatible with the context. Stated differently, elevations in efficiency delay an inference because of inconsistent diagnostic information from the context and tactics.

The explanation for the midlevel information-seeking goal also applies to the specific goal (i.e., obtain reasons for having a political or religious affiliation): Efficiency raises the incompatibility in diagnostic information from the tactics and the initial-interaction context that prevents detectors from relying on the context for goal inferences and yields tactics relevant. Therefore, the predictions for the midlevel goal are the same for the specific goal; but because the specific goal is weakly linked to initial interactions, whereas the midlevel goal is moderately linked to that context, the effects of efficiency are stronger for the specific goal than the midlevel goal. Increases in efficiency for the specific goal produce inference restrictions that are significantly incompatible with the initial-interaction context; yet, efficiency for the midlevel goal generates moderate incompatibility with the context. The higher incompatibility for the specific goal places greater emphasis on efficiency. Thus, the corresponding hypotheses are

Hypotheses 3-4: When pursuers strive to achieve a midlevel information-seeking goal in an initial interaction, pursuers' efficiency is moderately positively correlated with detectors' accuracy (H3) and onset latency (H4).

Hypotheses 5-6: When pursuers strive to achieve a specific information-seeking goal in an initial interaction, pursuers' efficiency is strongly positively correlated with detectors' accuracy (H5) and onset latency (H6).

Individual Differences in Goal Detection

Even though prior goal detection research (Palomares, 2008) suggested the importance of individual differences, the theoretical framework has not directly integrated their role hitherto.

Perspective-Taking

Perspective-taking or the process of approaching an interaction from another's point of view (Galinsky, Ku, & Wang, 2005) might figure into goal detection. Perspective-takers can seek their goal from their cointeractant's (i.e., detector's) standpoint and thus tailor messages accordingly (Higgins, 1981). Personalized message production encourages efficient goal pursuit and successful goal achievement (Schober, 1998), and it facilitates the conveyance of meaning and intention (Clark & Schaefer, 1987; Gibbs, 1987; Krauss & Chiu, 1998). Therefore, recipient-tailored messages likely enhance the extent to which a detector's inference restrictions contain the pursuer's true goal. As such, the theoretic framework predicts

Hypotheses 7-8: Pursuers' perspective-taking is positively correlated with detectors' accuracy (H7) and negatively correlated with detectors' onset latency (H8).

Likewise, detectors' perspective-taking may play a role. Just as message producers' perspective-taking enhances the transference of meaning and intention, so it does for message processers (Davis, 2005). Perspective-taking expands the overlap between the mental representations of the self and another (Davis, Conklin, Smith, & Luce, 1996; Galinsky & Moskowitz, 2000). For example, observers who took the point of view of an actor completing a task encoded the actor's goals more similar to the actor's encoding than nonperspective-takers (Lozano, Hard, & Tversky, 2006). Due to increased mental overlap, perspective-taking detectors likely have inference restrictions that focus on the pursuer's true goal. Perspective-taking thus can increase accuracy and decrease onset latency. Yet, although interpreting an utterance can be a function of the interpreter's perspective (Keysar, 1994), the extent to which perspective-taking facilitates understanding depends on the directness of a statement (Gibbs, 1994; Holtgraves, 2005). Thus, a detector's perspective-taking will promote accurate and quick goal inferences for only inefficient goal pursuit because it is only beneficial when tactics inadequately restrict inferable goals:

Hypotheses 9-10: Detectors' perspective-taking is positively correlated with their accuracy (H9) and negatively correlated with their onset latency (H10) at low levels of pursuers' efficiency, but not at either moderate or high levels of efficiency.

Suspicion

Detectors' suspicion or skepticism of others' motives (see Wrightsman, 1991) likely correlates with accuracy and onset latency. Suspicious individuals tend to be cynical and distrusting of others. As a result, skeptics might second guess innocuous goals (e.g., information seeking) that seem superficially probable and instead infer an underlying alleged malevolent goal. Skeptics may also hesitate to infer a goal. Suspicious people likely have a schema that predisposes them to discount message veracity (Malamuth & Brown, 1994). In fact, skeptics may have a chronically accessible mental structure that hampers the inference restriction process. Regardless of whether diagnostic information from the context and tactics points to the true goal, skeptics likely have other antisocial goals accessible that they are more inclined to infer. Thus,

Hypotheses 11-12: Detectors' suspicion of others' motives is negatively correlated with their accuracy (H11) and positively correlated with their onset latency (H12).

Consequences of Goal Inference Accuracy

This research also advanced work on goal detection in terms of perceived communication competence. Competence, as presently defined, is a behaviorally based impression of another's communicative aptitude or ability (Wilson & Sabee, 2003). The more people thought their partner was sensitive to their goals, the more competent they perceived their partner to be (Lakey & Canary, 2002). Detectors' accuracy likely increases pursuers' and detectors' competence because it promotes effective communication (Berger, 2003). For example, people unable to adjust their beliefs about their partners' goals judged their partners more harshly than those with accurate goal beliefs (Russell & Schober, 1999). Accurate goal inferences provide a framework for people to interpret others' behavior (Taylor & Crocker, 1981) and to know how to respond to such behavior (Langer & Abelson, 1974), which facilitates positive competence appraisals:

Hypotheses 13-14: Detectors' goal inference accuracy is positively correlated with the competence judgments of pursuers about detectors (H13) and detectors about pursuers (H14).

Method

Participants and Design

Students ($N = 138$) at a West Coast university participated, received course credit and were 63% female with ages from 18 to 38 years ($M = 21.24$, $SD = 2.14$). Participants formed 69 interaction dyads wherein one member was randomly

assigned as the pursuer who tried to achieve an abstract, midlevel, or specific information-seeking goal. The other member was the detector who did not receive a goal and was unaware that the pursuer had a goal. After initial instructions, dyad members conversed and then each independently completed a questionnaire.

Variables

Goal specificity. Goal specificity was operationalized via five different information-seeking objectives (i.e., one abstract, two midlevel, and two specific goals). The abstract goal was to "find out as much as you can about your partner." The midlevel and specific goals used the topics of politics and religion (which is consistent with other information-seeking research; Waldron, 1990). Two different topics were used for stimulus generalizability. For the midlevel goals, pursuers were asked to "find out as much as you can about your partner's views on" either politics or religion. The specific goals had pursuers "find out what your partner's political party/religious affiliation is (if any) and why your partner has that political/religious preference."

Goal pursuit efficiency. Interactions were videotaped and coded for the efficiency with which pursuers sought their goal. Using a measure adapted from extant research on information seeking (Berger & Kellermann, 1983; Waldron, 1990), a judge rated the extent to which pursuers efficiently strived to achieve their goal on a continuous 7-point scale (7 = *efficient*; $M = 3.16$; $SD = 1.54$). High efficiency was defined as direct, expedient, immediate, effortless, and not wasteful. For example, a pursuer of the abstract goal who almost never asked personal questions, occasionally asked questions on general or relatively impersonal topics, sometimes revealed personal information, and answered questions (followed by "How about you?" at times) received an efficiency score on the low end of the 7-point scale; a pursuer of the same goal, however, who frequently asked direct, broad, and open-ended questions on personal topics was given a score on the high end of the scale. By necessity, the judge was aware of pursuers' true goal. The judge focused on the pursuers' verbal behaviors (i.e., tactics) and disregarded the pursuers' effectiveness and appropriateness as well as the detectors' behavior. Another judge coded a randomly selected sample of half of the tapes yielding a high interjudge correlation ($r = .72$).

Inference accuracy. Accuracy was assessed in three stages. First, detectors completed an open-ended item which defined a goal as an objective or purpose a person tries to achieve when talking with someone else. This item then asked what detectors thought their partner was trying to do while conversing and to list the goal(s) they thought their partner was pursuing. A second item had detectors single out and write a goal (among all listed in the first item) as the principal goal they thought their partner was trying to achieve foremost. In the third stage, two judges read detectors' responses to both items but coded responses only to the second item to assess the extent to which the detector's inference conceptually matched the pursuer's true goal. Judges

focused on how the underlying meaning of responses to the second item corresponded to the true goal, as opposed to any lexical and syntactic similarities. Judges independently coded accuracy on a 4-point scale (4 = *highly accurate*; $M = 2.01$; $SD = .93$; Krippendorff's $\alpha = .85$). Accuracy was a function of the extent to which the inferred goal's specificity and content were similar to the true goal's specificity and content. For example, if the true goal was the abstract goal, then the following four potential goal inferences would increase incrementally on the scale from low to high: (a) avoid awkwardness, (b) find out my background information, (c) discover my views and opinions, and (d) get to know me. Judges settled disagreements via discussion.

Inference onset. Onset was measured via an 8-point scale that had detectors indicate the approximate moment they initially decided that their partner was pursuing the goal that they singled out as the principal goal: 1 = *start of conversation* (or *before*); 4 = *middle of conversation*; 8 = *end of conversation* (or *after*; $M = 2.83$; $SD = 1.96$).

Perspective-taking. The perspective-taking subscale of the interpersonal reactivity inventory (Davis, 1980) was employed. The measure has seven items (two reverse coded) that assess the extent to which people generally put themselves in others' shoes, understand people better by picturing how things look from their perspective, have difficulty taking another's point of view, look at everyone's side of a disagreement, imagine how they would feel in someone else's place, do not waste time listening to others' arguments, and believe that there are two sides to every question they consider. The scale correlates with person-perception accuracy which bodes well for its validity (Bernstein & Davis, 1982). The items formed reliable 7-point scales for detectors ($\alpha = .81$; $M = 5.02$; $SD = .99$) and pursuers ($\alpha = .73$; $M = 4.96$; $SD = .93$).

Suspicion. For detectors' suspicion of others' motives, seven items (one reverse coded) were made to measure the extent to which detectors: (a) think people are out to get them, (b) think people are genuinely nice and kind, (c) think people have hidden agendas, (d) doubt people are generally honest about reasons for talking, (e) are suspicious of others because they might do something bad, (f) are afraid people are mean-spirited, and (g) think others have ulterior motives. This measure is similar to the generalized communicative suspicion scale of Levine and McCornack (1991), except that the current measure emphasizes perceptions of others' malicious motives, whereas the generalized suspicion scale focuses on perceptions of others' dishonesty. The items formed a reliable 7-point scale ($\alpha = .87$; $M = 2.89$; $SD = 1.05$).

Interpersonal communication competence. Perceived communication competence was assessed via the rating of alter competence scale (Spitzberg 1988). The scale's 27 items (8 reverse coded) formed reliable measures of detectors' impression of pursuers ($\alpha = .91$; $M = 5.33$; $SD = .70$) and pursuers' impression of detectors ($\alpha = .93$; $M = 5.37$; $SD = .74$).

Manipulation check measures. An open-ended goal-recall item had pursuers write their goal. A partner-recognition item asked if participants knew their partner before their involvement in the study, and if so, how. Finally, a demand-characteristics item asked all participants to indicate what they thought the researcher was trying to examine and understand via the study.

Procedure

The procedure was adapted from information-seeking research (Berger & Kellermann, 1983; Waldron, 1990). Each participant for a dyad arrived at one of two research labs (located in different wings of the same building) where a research assistant greeted them. Before arriving, one participant was randomly assigned to be the pursuer. Once both arrived, the assistants signaled via walkie-talkies to start the study. Each dyad member read instructions that first stated they would talk with someone and to imagine they were at a party meeting this person for the first time. After this initial information, instructions diverged for pursuers who read that they should try to do something during their conversation. Pursuers were directed to have a certain objective or purpose for the interaction and then read one of the five randomly assigned goals. Pursers learned they should not explicitly state their goal to their partner or that they even had a goal. All participants read that their conversation would be videotaped and that they should not talk about the instructions. Pursuers' directions mentioned their goal three times.

After reading the instructions, the research assistants asked participants to summarize their instructions. Once both participants correctly recapitulated their instructions and the pursuer restated the goal accurately, a research assistant escorted one participant to the other. Participants sat in chairs that were facing each other at a 90º angle. Pursuers always sat to the detectors' right. A research assistant told both participants that they could start the conversation once the assistant left the room. The assistant started the camera, left the room, closed the door, and started a timer. After 5 minutes, the assistant entered the room, stopped the camera, escorted participants to separate rooms, and asked each to complete a different questionnaire.

The pursuers' questionnaire first asked the goal-recall item. Next, pursuers completed filler items and then the rating of alter competence scale focusing on the detector. Pursuers then completed the perspective-taking items intermingled with fillers. Finally, pursuers completed the demand-characteristics and partner-recognition items and indicated their sex and age. Detectors first completed the accuracy items followed by the onset scale. Next, detectors completed filler items and then the rating of alter competence scale focusing on the pursuer. Detectors then completed the suspicion of others' motives and perspective-taking items mixed with filler items. Finally, detectors answered the demand-characteristics and partner-recognition items and stated their sex and age. After participants completed their

questionnaire, a research assistant debriefed and thanked them. The entire procedure lasted approximately 30 to 40 minutes.

Results

Data Analysis Strategy

As data analyses occurred at the dyadic level, each case included all variables for the pursuer and the detector. Most variables (i.e., efficiency, specificity, accuracy, onset latency, and suspicion) had only one measure for each dyad. In the case of competence and perspective-taking (which both dyad members completed), the correlation between detectors and pursuers for each scale was virtually zero, rs < |.015|. Data for pursuers and detectors were independent.

Stimulus Generalizability

The t tests on efficiency, accuracy, onset latency, and competence revealed no significant differences between dyads whose pursuer sought the religious and political midlevel goals. Similar t tests for the specific goals also demonstrated no significant effects. All tests had power of at least .59 for a large effect (d = .80; Cohen, 1988) and a two-tailed α of .05. The midlevel goals were collapsed as were the specific goals, and topical differences considered no further.

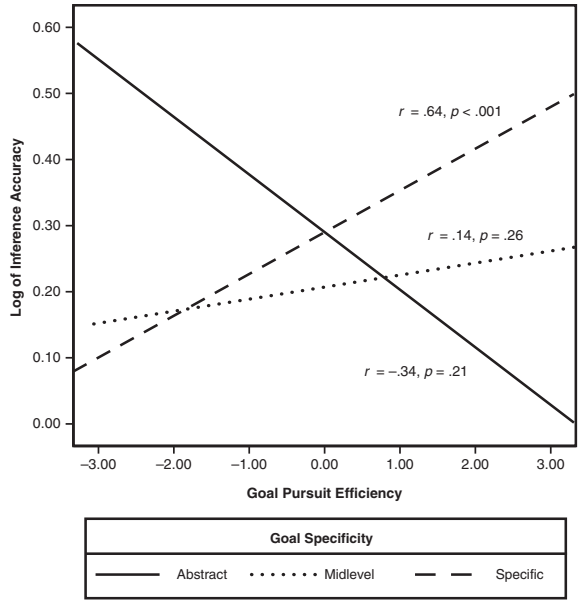
Manipulation Checks

To ensure an effective specificity manipulation, the goal-recall item was examined; any dyad with a pursuer who incorrectly recalled the goal was deleted. Pursuers' written goal and the goal they read prior to the interaction did not have to match verbatim, but they did have to restate the gist of their goal correctly. Most pursuers recalled their goal. Seven dyads (10.14%) whose pursuer erroneously recalled the goal were excluded. To include initial interactions only, one dyad (or 1.45%) was dropped because the partner-recognition item revealed that they had met previously. Also, one dyad was dropped because the videotape showed that one member had extreme difficulty with English, clearly causing miscommunication. No dyads were dropped based on the demand-characteristics item because all inaccurately stated the study's purpose.

Inference Accuracy

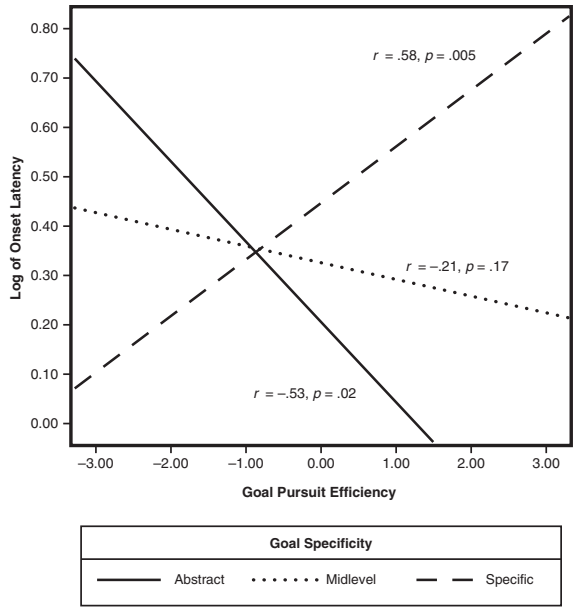
A hierarchical moderated regression tested H2, H3, and H5. The distribution of accuracy was significantly positively skewed (skewness = .67, z = 2.15, p = .03). To

Figure 1
The Accuracy of Goal Inferences as a Function of the Efficiency of Pursuing the Abstract, Midlevel, and Specific Goals



normalize accuracy's distribution, its log served as the dependent variable (Tabachnick & Fidell, 2007). Efficiency was centered, and dummy variables for specificity used the abstract goal as the reference category. Efficiency and specificity were entered in the first block and the interaction terms in the second block. The first block did not demonstrate a significant R^2 change, $R^2\Delta = .06$, $F(3, 56) = 1.16$, $p = .33$: Specificity and efficiency had no main effects. Adding the interaction terms in the second block yielded a significant increase in accounted variance, $R^2\Delta = .10$, $F(2, 54) = 3.14$, $p = .05$, $\eta^2 = .10$, demonstrating a significant efficiency-specificity interaction. Following Aiken and West's (1991) strategy for testing interactions between continuous and categorical variables (i.e., shift the reference category of the dummy-coded variable and repeat the regression), the simple slopes of the relationship between efficiency and accuracy within each level of specificity tested the hypotheses. With efficiency and accuracy transformed, Figure 1 graphs the three slopes along with the efficiency-accuracy zero-order correlations for each goal. The slope for the abstract goal was nonsignificant, $B = –.086$, $t(54) = –1.61$, $p = .11$, which supports H2 of no relationship between efficiency and accuracy for the goal set at an abstract specificity level. The slope for the midlevel goal condition also was nonsignificant,

Figure 2
The Onset Latency of Goal Inferences as a Function of the Efficiency of Pursuing the Abstract, Midlevel, and Specific Goals



B = .018, t (54) = .74, p = .46, which conflicts with H3. The slope for the specific goal was significant, B = .063, t (54) = 2.30, p = .03, η^2 = .09, confirming H5 that efficiency and accuracy are positively correlated for the specific goal.

Inference Onset Latency

The same regression procedure tested H1, H4, and H6. As onset latency was positively skewed (skewness = 1.02, z = 3.23, p = .001), the log of onset was the dependent variable. The first block did not demonstrate significant main effects, $R^2\Delta$ = .06, F(3, 53) = 1.09, p = .36. The second block, however, yielded a significant interaction, $R^2\Delta$ = .20, F(2, 51) = 7.07, p = .002, η^2 = .22. Similar to Figure 1, Figure 2 graphs the slopes for onset latency. The slope for the abstract goal was significant, B = –.163, t (51) = –2.21, p = .03, η^2 = .09, which is consistent with H1 (i.e., a negative relationship between efficiency and onset for the abstract goal). The slope for the midlevel goal was nonsignificant, B = –.034, t (51) = –.98, p = .33, which is inconsistent with H4. The simple slope for the specific goal was significant, B = .115, t (51) = 2.91, p = .005, η^2 = .14, supporting H6 that efficiency was positively correlated with onset latency for the specific goal.

Individual Differences

Pursuers' perspective-taking. One-tailed correlations tested H7 that predicted a positive association between detectors' accuracy and pursuers' perspective-taking and H8 that predicted a negative relationship between detectors' onset latency and pursuers' perspective-taking. Counter to H7, accuracy was virtually unrelated to pursuers' perspective-taking, r (58) = –.06, p = .34, but onset was negatively correlated to perspective-taking, r (55) = –.38, p = .002, which supports H8.

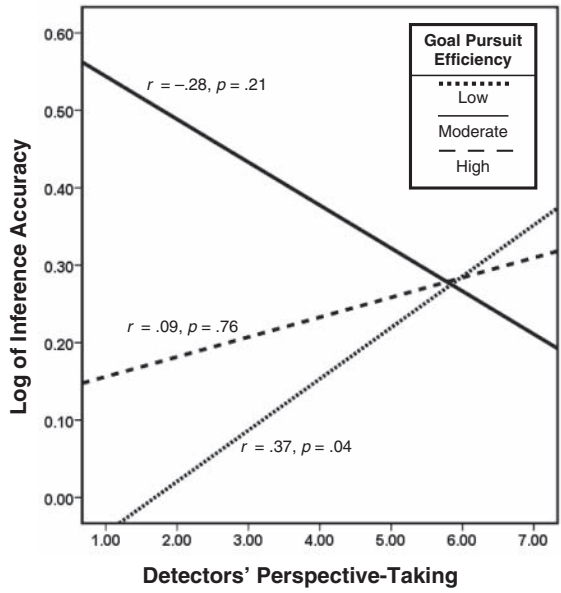
Detectors' perspective-taking. H9 and H10 predicted an interaction between pursuers' efficiency and detectors' perspective-taking (i.e., perspective-taking and accuracy/onset correlate only for inefficient pursuit). To test this possibility for accuracy, a general linear model (GLM) employed a moderated regression wherein accuracy's log was regressed onto perspective-taking and efficiency. The intended perspective-taking by efficiency interaction was marginally significant, F(1, 56) = 3.17, p = .08, η^2 = .05. To interpret the interaction, accuracy-perspective-taking correlations (one-tailed when appropriate) were examined for low, moderate, and high levels of efficiency: Efficiency was trichotomized so that efficiency scores greater than half a standard deviation from the mean were high, low efficiency was less than half a standard deviation from the mean, and moderate efficiency was within half a standard deviation from the mean. Figure 3 plots the correlations between accuracy and perspective-taking for each level of efficiency. Consistent with H9, the correlation for the low level of efficiency was significant, r (22) = .37, one-tailed p = .04, whereas correlations for moderate, r (19) = –.28, p = .21, and high, r (14) = .09, p = .76, efficiency were not statistically significant. A similar GLM procedure for onset latency revealed no significant effects, Fs < 1.24, thereby yielding no support for H10.

Suspicion. One-tailed correlations tested H11 and H12 both of which focused on the detectors' suspicion of others' motives. A significant negative correlation between accuracy and detectors' suspicion emerged, r (58) = –.39, p = .001, but the relationship between suspicion and onset latency was nonsignificant, r (55) = –.13, p = .17. H11, but not H12, was supported.

Competence as a Consequence of Inference Accuracy

H13 predicted that accuracy would be positively correlated with pursuers' rating of detectors' communication competence, and H14 predicted a similar relationship for accuracy and detectors' judgment of pursuers' competence. H13 was not supported, r (58) = .06, p = .32. However, support for H14 emerged, r (58) = .23, p = .04: The extent to which detectors judged a pursuer competent was positively associated with their accuracy at inferring the pursuer's goal.

Figure 3
The Accuracy of Goal Inferences as a Function of Detectors' Perspective-Taking for Low, Moderate, and High Levels of Goal Pursuit Efficiency



Discussion

Experiment 1 uncovered important aspects of the goal detection process: For the abstract information-seeking goal, efficiency was not significantly related to accuracy but negatively associated with onset latency. In other words, when pursuers had a goal strongly linked to the context factor, their level of efficiency was associated with the amount of time their cointeractant took to infer their goal but not with how accurate the inference was. If the information-seeking goal was specific, then efficiency was positively correlated with accuracy *and* onset. Pursuing a goal weakly linked to the initial-interaction context put more emphasis on the tactics and their efficiency. These effects are notable; yet, determining causality is problematic given efficiency's operationalization. Whether efficiency or another explanation accounts for the results is unclear because efficiency was not manipulated. Notwithstanding an artificial induction of the pursuer's goal, Experiment 1 tested the framework in a relatively naturalistic setting to maintain some ecologically validity. Doing so, nonetheless, limited the ability to establish causality. Experiment 2 addressed this limitation by employing confederates to directly manipulate efficiency.

Experiment 2

The second experiment was similar to the first except that a confederate served as the goal pursuer who either efficiently or inefficiently sought information from a participant. The objective of Experiment 2 thus was to replicate Experiment 1 using an alternative efficiency operationalization that could provide more convincing evidence for causality. All hypotheses of Experiment 1 were forwarded for the current study except for H7, H8, and H13 that were excluded because they dealt with pursuers' responses and could not be tested given the design.

Method

Participants and Design

Students of the same university as those in Experiment 1 received course credit (N = 190; 72% female; age: 18 to 35 years, M = 20.77, SD = 2.42). Participants conversed with one of three confederates who, unbeknownst to them, pursued a goal either efficiently or inefficiently.

Goal Specificity and Goal Pursuit Efficiency

The same five information-seeking goals of Experiment 1 manipulated goal specificity in Experiment 2. The operationalization of efficiency, however, used confederates who were blind to the hypotheses. For high efficiency, confederates frequently asked questions directly related to the goal, whereas inefficient confederates answered participants' questions, infrequently asked questions about topics indirectly related to the goal, and occasionally self-disclosed. For example, confederates, who efficiently sought the abstract information-seeking goal, directly asked several broad, open-ended questions on personal topics such as interests, academic/career objectives, and family. In contrast, inefficient confederates with that goal answered the participant's questions after which they at times asked "How about you?", occasionally revealed personal information, sometimes asked about relatively impersonal topics (e.g., classes, professors, weather, etc.), and virtually never asked a personal question. To prevent the conversations from being overly rigid and artificial, confederates used any means they saw fit in any given interaction as long as they strived to achieve the assigned goal in the predetermined efficient or inefficient manner.

Training occurred in four stages. First, confederates read descriptions of the five goals until they could recite them and explain and differentiate their conceptual meanings. Next, confederates learned the definition of efficiency and its distinction from related concepts such as appropriateness and effectiveness. Third, confederates viewed a selection of conversations from Experiment 1 as exemplars; for instance,

they watched a videotaped dyad with a pursuer who efficiently sought the abstract goal, a dyad with an inefficient pursuer of the abstract goal, a dyad whose pursuer efficiently strived for a midlevel goal and so forth. During this viewing, the author pointed out examples of efficient and inefficient tactics and explained their corresponding strategies. Fourth, in round-robin sessions confederates practiced while the author provided feedback. Practicing ended once confederates instantiated the manipulations proficiently.

Measures

Operationalizations of accuracy (M = 1.96; SD = .94; Krippendorff's α = .86), onset latency (M = 2.72; SD = 2.03), perspective-taking (α = .80; M = 5.04; SD = .97), suspicion (α = .85; M = 2.65; SD = 1.03), communication competence (α = .93; M = 5.48; SD = .72), and the partner-recognition and demand-characteristics items were identical to those of Experiment 1.

Procedure

Participants arrived at lab where a research assistant greeted them, told an ostensible assistant (who was actually a confederate) via walkie-talkies to start, and handed the detector instructions identical to those of Experiment 1. Once the participant restated the instructions correctly, he or she was seated in one of two chairs arranged in the same manner as Experiment 1. The assistant then asked the participant to wait while he or she brought the conversation partner into the room. Next, the assistant left the room, closed the door, and waited for the confederate.

After receiving the signal to start via the walkie-talkies, the confederate consulted a manipulation schedule to determine the specificity-efficiency combination (e.g., inefficient-abstract) at which to pursue the goal. Each confederate had a unique schedule that contained a list of several sets of the 10 randomly ordered specificity-efficiency combinations. Confederates noted the next unused combination from their list. Each confederate thus pursued a goal with a unique specificity-efficiency combination for each set of 10 contiguous conversations, ensuring that the combinations evenly spanned the entire data collection period for each confederate. The confederate then waited a few minutes and went to the assistant.

Next, the assistant led the confederate into the room, asked the confederate to take a seat in the chair to the participant's right, told them to begin after the assistant left the room, started the camera, exited, closed the door, and started a timer. After 5 minutes, the assistant entered the room, stopped the camera, handed the confederate an actual questionnaire, asked the confederate to complete it at a desk in the room, escorted the participant to a separate room, and asked the participant to complete a questionnaire that was identical to that of Experiment 1. Then, the assistant returned to and informed the confederate that returning to the waiting room was now possible without the

participant seeing the confederate. After participants completed the questionnaire, the assistant debriefed and thanked them. The entire process took 30 to 40 minutes.

Results

Stimulus and Confederate Generalizability

Three *t* tests on accuracy, onset, and competence revealed no significant differences between the religious and political midlevel goals. Similar *t* tests for the specific goals also showed no significant differences. All tests had power greater than .86 assuming a large effect (d = .80; Cohen, 1988) and a two-tailed α of .05. Topical differences were, therefore, disregarded.

Three analyses of variance (ANOVAs) tested for differences in accuracy, onset latency, and competence across the three confederates. With a large effect size (f^2 = .35) and a two-tailed α of .05, power exceeded .97 (Cohen, 1988). The ANOVAs for accuracy and onset revealed no significant differences among the confederates. However, the ANOVA for competence indicated a significant difference between the three confederates, $F(2, 187) = 13.56$, $p < .001$, $\eta^2 = .13$. As such, subsequent analyses regarding competence controlled for confederates.

Manipulation Checks

To ensure successful efficiency and specificity manipulations, two judges reviewed all conversations to make a dichotomous decision as to whether the confederate actually instantiated the intended condition. Judges underwent the same training as confederates except for the final practice stage. Judges were aware of the conditions by necessity, focused on confederates' tactics, ignored confederates' level of effectiveness and appropriateness, and disregarded participants' behavior. Judges reached their decisions independently, agreed 91% of the time and settled disagreements via discussion. Based on this process, 14 participants (or 7.37%) were deleted because their confederate did not pursue the assigned goal in the predetermined efficient or inefficient way. Also, 8 participants (or 4.21%) were deleted because they met and talked with their confederate formerly. No participant accurately stated the study's purpose; yet, 9 participants (or 4.74%) were deleted because they suspected the confederate was not a real participant, as revealed via the videotaped interactions, questionnaire responses, or debriefing.

Inference Accuracy

The log of accuracy served as the dependent variable to normalize its skewed distribution (skewness = .78, $z = 4.07$, $p < .001$). A 2 by 3 ANOVA yielded no main effects for specificity, $F(2, 153) = .08$, $p = .92$, and efficiency, $F(1, 153) = 3.65$,

$p = .06$, but a significant interaction, $F(2, 153) = 3.30$, $p = .04$, $\eta_p^2 = .04$. One-tailed planned contrasts tested hypotheses (when suitable), as recommended for precise, theory-driven predictions (Rosenthal, Rosnow, & Rubin, 2000; Wilkinson & Task Force on Statistical Inference, 1999). H_2 was supported: Accuracy for the abstract goal was not significantly different across inefficient (.25) and efficient (.29) conditions, $t(153) = .45$, $p = .66$. For the midlevel goal, no significant difference emerged between the inefficient (.26) and efficient (.25) conditions, $t(153) = -.17$, one-tailed $p = .43$, which was inconsistent with H_3. As H_5 predicted, accuracy was significantly higher for efficient (.34) than inefficient (.17) pursuit of the specific goal, $t(153) = 3.34$, one-tailed $p < .001$, $\eta^2 = .07$. The top of Figure 4 illustrates these results. Experiment 2 replicated Experiment 1 in terms of accuracy.

Inference Onset Latency

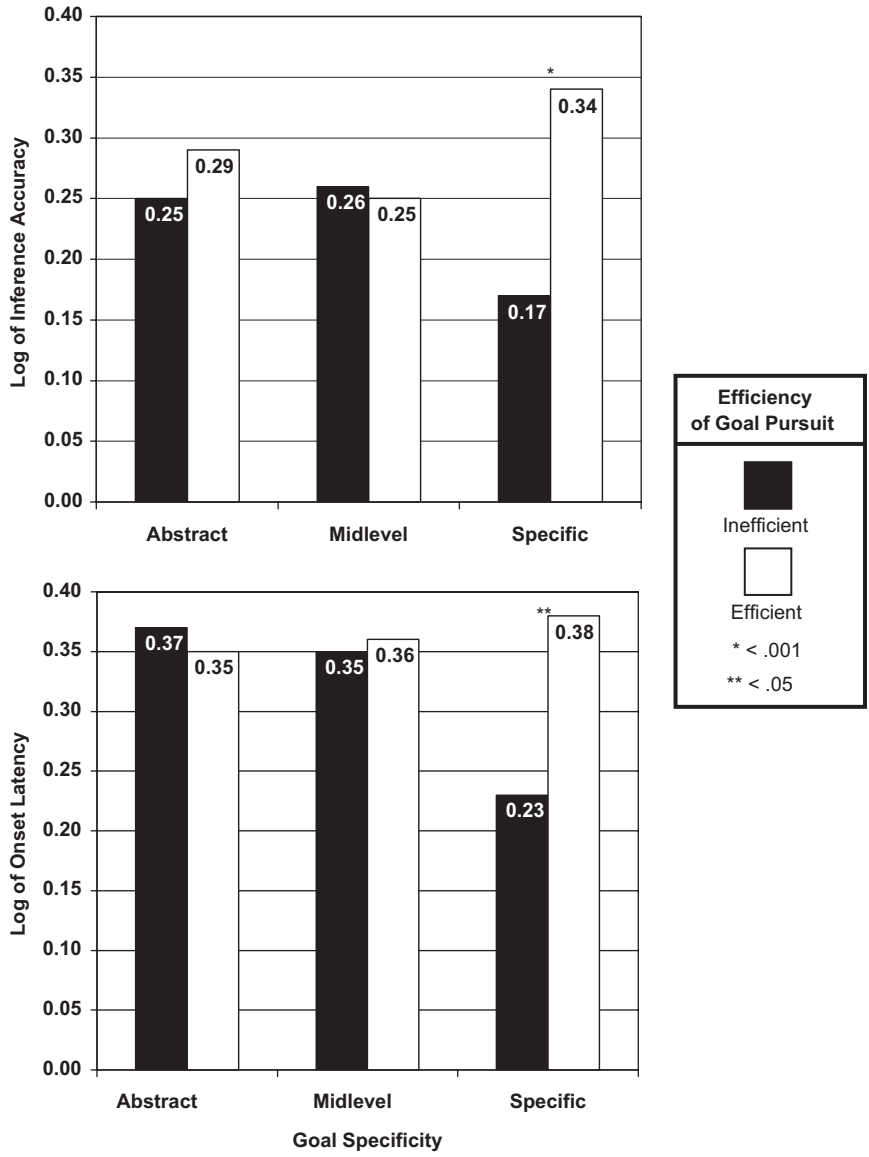
Onset's log was the dependent variable (skewness = 1.33, $z = 6.92$, $p < .001$). No main effects for specificity, $F(2, 153) = .57$, $p = .57$, and efficiency, $F(1, 153) = .83$, $p = .36$, emerged. The interaction also was not significant, $F(2, 153) = 1.04$, $p = .36$. One-tailed a priori contrasts did not support H1 and H4: Onset did not reliably vary across efficient (.35) and inefficient (.37) conditions for the abstraction goal, $t(153) = -.14$, $p = .45$, nor the midlevel goal (efficient = .36; inefficient = .35), $t(153) = .14$, $p = .45$. Onset for the specific goal was shorter for the inefficient (.23) than efficient (.38) conditions, $t(153) = 1.87$, $p = .03$, $\eta^2 = .02$, which supports H6. For onset latency, Experiment 2 partially replicated Experiment 1 (see lower half of Figure 4).

Individual Differences

Detectors' perspective-taking. H9 focused on the relationships between the accuracy and perspective-taking of detectors within the two efficiency conditions. A GLM regressed the log of accuracy onto efficiency and perspective-taking factors and revealed no effects, Fs < .97. In fact, correlations between perspective-taking and accuracy within the efficient, $r(72) = .01$, $p = .92$, and inefficient, $r(83) = .08$, one-tailed $p = .23$, conditions were not significant. Experiment 2 did not replicate the perspective-taking-accuracy results for detectors. A similar GLM for onset (H10) revealed no significant effects, Fs < .73, which does not support H10 but replicates Experiment 1.

Suspicion. The negative one-tailed correlation between detectors' accuracy and suspicion (H11) was marginally significant, $r(157) = -.12$, $p = .06$, but a similar correlation between onset latency and suspicion (H12) was virtually nonexistent, $r(157) = .004$, $p = .48$. Experiment 2 replicated Experiment 1 for suspicion although tenuously given the marginal effect.

Figure 4
The Accuracy and Onset Latency of Goal Inferences as Functions of Goal Specificity for Inefficient and Efficient Goal Pursuit



Interpersonal Communication Competence

H14 predicted a positive association between accuracy and detectors' competence judgment of the confederate. To control for confederates, competence was regressed onto accuracy and confederate dummy variables in a hierarchical regression model wherein the dummy variables were entered first. As expected, based on the confederate-generalizability findings, the R^2 change for the first block was significant, $R^2\Delta = .13$, $F(2, 156) = 11.12$, $p > .001$, $\eta^2 = .12$. The addition of accuracy, however, did not account for significantly more variance beyond the confederates, $R^2\Delta = .002$, $F(1, 155) = .29$, $p = .59$. H14 did not receive support and so did not replicate Experiment 1 regarding detectors' competence judgment of pursuers.

Discussion

Experiment 2 generally replicated Experiment 1. The claim that the efficiency of goal pursuit affects the accuracy and onset latency of goal inferences depending on the level of specificity at which a goal is set received support from both experiments. In fact, Experiment 2 provided support for the causality of efficiency that was equivocal based on Experiment 1 alone. Even so, efficiency may have correlated with other goal-pursuit dimensions in either experiment. Perhaps appropriateness and efficiency, for example, were inversely related. Even though judges and confederates focused on efficiency independent from other concepts, results may be due to one or more dimensions extraneous or in addition to efficiency. However, these potential confounds are not detrimental to interpreting results. Indeed, preventing confounds could have actually lowered validity because efficiency and other dimensions can be correlated for information-seeking goals despite conceptual differences (Kellermann & Park, 2001; Kellermann & Shea, 1996). Orthogonally manipulating efficiency and appropriateness could have created conditions that are infrequent in naturally occurring interactions. Thus, any adverse effects from potential confounds are likely innocuous because the concepts covary in most real situations and empirically separating them threatens ecological validity. The potential for confounds cannot be denied; yet, they are minor, and the effects of efficiency are likely nonspurious.

Another important consideration is that Experiment 1 supported H2, whereas Experiment 2 did not. This discrepancy is noteworthy because the nonreplicated finding spawns the question of what led to the incongruity across the experiments. Perhaps, efficiency's range was wider in Experiment 1 than Experiment 2. For example, what constituted inefficient goal pursuit in Experiment 2 may have been more comparable to moderate or low-moderate efficiency in Experiment 1; as a result, Experiment 2 may have manipulated efficiency with a range that was more restricted than the range in Experiment 1. This range-constriction explanation is possible but improbable because confederates watched videotaped interactions from

Experiment 1 so they could model their efficiency after pursuers in Experiment 1. A more likely reason is that the use of confederates made Experiment 2 less natural than Experiment 1; confederates' efficiency thus did not alter onset latency in the abstract goal condition because the interactions were relatively contrived. In fact, the pattern and timing of pursuers' tactic use in Experiment 2 may have been more consistent or formulaic than in Experiment 1. This explanation, however, is not foolproof because efficiency increased onset latency for the specific goal in both experiments.

Another replication concern deals with H14 (i.e., competence-accuracy results). Again, the reason may be due to confederates. In Experiment 2, pursuers' behavior may have been particularly constrained and more routinized than that of nonconfederate pursuers. As a result, because detectors' competency ratings of a pursuer were a function of each confederate's particular communicative behaviors, detectors' accuracy did not promote their competence ratings. Moreover, confederates' trait communication competence may have largely determined their competency ratings thereby muddling any added benefit from accuracy. In fact, Experiment 2 is consistent with this explanation: Detectors rated pursuers' competence depending on the particular confederate. A confederate explanation may even explain the lack of replication for H9: Confederates' behavior was relatively more scripted than the nonconfederate pursuers in Experiment 1; thus, detectors' perspective-taking did not facilitate their accuracy. Explanations for these discrepancies are unclear but nonetheless worthwhile to address in future research.

General Discussion

Across both experiments, several ramifications emerged regarding theory, limitations, and practical issues, as discussed in the current section.

Theoretical Implications

Results for accuracy and onset were generally consistent with hypotheses for the abstract and specific information-seeking goals. The explanation hinges on variation in the compatibility of the initial-interaction context and tactic factors. For the abstract goal, inference restrictions from the context-goal linkages and the tactic-goal linkages were compatible. Thus, efficiency did not facilitate detectors' accuracy because initial interactions are strongly linked to the abstract goal thereby producing adequately narrow inference restrictions that lowered the diagnostic utility of tactics for inferring a goal. Efficiency in this instance, however, was negatively correlated with onset latency because it decreased the amount of time for restrictions to hone in the true goal; this narrowing process was slower at low levels of efficiency. For the abstract goal, in other words, efficiency played a role regarding when to infer a goal, but not what goal to infer.

In contrast, the initial-interaction context and tactic factors were incompatible for the specific information-seeking goal, especially when goal pursuit was efficient because initial interactions are virtually unlinked to that goal. That is, rises in efficiency decreased factor compatibility that triggered an inability to rely solely on the initial-interaction context for goal inferences yielding tactics (and their level of efficiency) more relevant. The context-generated restrictions thus did not aid in inferring the specific goal as much as the tactic-goal linkages did, and so escalations in efficiency increased accuracy and onset latency. Efficient pursuit of the specific goal yielded accurate but late inferences because the incompatibility required additional time for the tactic-generated restrictions to eventually trump the context-generated restrictions.

Midlevel Goal

Hypotheses were well supported for the specific goal; yet, those for the midlevel goal were incorrect even though the explanation was similar for the two sets of hypotheses. Nonsignificant outcomes could have occurred for a few reasons. First, perhaps the midlevel goal was not incompatible enough with the initial-interaction context. In fact, although the midlevel goal's specificity resided between that of the abstract and specific goals, it may have been closer to the abstract goal than the specific goal. As a result, for the midlevel goal, the inference restrictions from the initial interaction and the restrictions from the tactics may have been more compatible than incompatibility. Thus, for the midlevel goal, perhaps the two sets of mutual restrictions from the context and tactics partially overlapped which yielded adequate goal inferences restrictions (see Palomares, 2008); but for the specific goal efficient tactics primarily provided adequate restrictions, whereas for the abstract goal the context supplied adequate restrictions. This explanation seems unlikely, however, because the efficiency-accuracy slopes for the midlevel goal in Experiment 1 resembled the specific goal more than the abstract goal (Figure 1) even though this explanation would predict the opposite.

A second, more probable explanation focuses on experience with midlevel goals. People tend to represent goals at a midlevel of specificity (Meyer, 2003) and thus may be more familiar with goals set at a midlevel than other levels. Efficiency for the midlevel goal, therefore, may not have increased detectors' inference accuracy and onset because they were more familiar with, and could more readily recognize, the midlevel goal than the specific goal. Perhaps pursuers were also more familiar with the midlevel than specific goals, and as a result they may have been much more effective at achieving the midlevel goal at various levels of efficiency which allowed detectors to infer the midlevel goal based on the pursuers' achievement of the goal. Whatever the explanation, because the data from both experiments question the theoretical framework as currently conceptualized regarding the midlevel goal, future work might advance or modify the framework to answer questions emerging from the lack of midlevel-goal effects.

Detectors' Goals

The theoretical framework focused on the pursuer's goal and ignored the possibility that detectors also had a goal; yet, the framework can extend to focus on pursuers' *and* detectors' goals. First, the level of congruency between the pursuer's and detector's goals is likely significant. Because initial interactions are strongly linked to the abstract goal of obtain personal information (Berger & Kellermann, 1994), detectors in the current research most likely sought that goal across all conditions of both experiments. The congruency of pursuers' and detectors' goals, however, could affect goal detection. An experiment that manipulates the specificity of both the detector's and pursuer's information-seeking goals, for example, would predict the following: Efficiency will have no bearing on goal detection when a detector and pursuer have the same specific information-seeking goal, but it will have an impact when the pursuer's goal is specific and the detector's goal is abstract. A related experiment (actually in progress; Palomares, 2009) addresses the possibility that people intentionally equivocate (Bavelas, Black, Chovil, & Mullett, 1990) or remain opaque (Berger & Kellermann, 1989) at times to thwart information seeking: A goal congruency manipulation varies pursuer's and detector's goals from identical (i.e., both seek information) to concordant (i.e., seek versus reveal information) to discordant (i.e., seek versus conceal). When goals are identical, efficiency is expected to be unrelated to accuracy, whereas when goals are either in concord or discord, efficiency will increase accuracy depending on the cognitive busyness of the detector. The general explanation for both experiments is that efficiency does not influence goal detection when the pursuer's and detector's goals are the same because the pursuer's goal is highly accessible for detectors given their pursuit of the same goal, but efficiency can play a role when the goals are not identical.

A third extension is regarding pursuers' projection of their own goal onto others. People project their general mental states onto others (Ames, 2004). Similarly, pursuers may infer erroneously that someone is pursuing the same goal even though he or she is not because the goal is already accessible. Goal contagion is a fourth extension: Detectors' goal inferences might affect the goals they in turn pursue. Research suggests that noninteraction goals (e.g., make money) can be contagious, such that someone who infers a goal subsequently pursues that goal (Aarts & Hassin, 2005). Perhaps goal contagion occurs for interaction goals as well: A detector who infers an information-seeking goal pursues that goal in the same interaction or a subsequent one. Future research can extend and apply the present goal detection framework in these and other ways.

Perspective-Taking

Detectors' perspective-taking was related to accuracy only for inefficient goal pursuit (in Experiment 1). This conditional effect on goal detection is analogous to

the interpretation of meaning (Gibbs, 1994; Holtgraves, 2005). The current perspective-taking scale, however, is potentially problematic because it measured a self-reported tendency and not a skill. Yet, because research has tested the scale's criterion validity showing that it correlates well with perspective-taking performance (Bernstein & Davis, 1982), this concern might not be very serious. Nonetheless, future research might directly measure perspective-taking ability (e.g., Hale & Delia, 1976) and not just its perceived tendency. Skill measures for detectors may yield alternative correlations with pursuer's efficiency, and it might even explain why the self-report scale did not correlate with onset. A skill measure for pursuers could also be revealing. Experimentally induced perspective-taking (see Holtgraves) is yet another option.

Message Production and Processing Theory

The current framework and experiments have implications for other theories of message production and processing. The present work, for example, is consistent with action assembly theory (Greene, 1997) and the cognitive rules model (Wilson, 1990) both of which rely on associations between goals and factors. The concept of factor-goal linkages is rooted in these earlier theories. The linkage concept thus has utility not just for the production of communicative behaviors and the activation of goals but also for their detection. Also, when explicating the goal construct Dillard (1997) asked, "*should* we study goal specificity?" (p. 59, original emphasis) reaching an affirmative answer. The present work on goal detection supports Dillard's conclusion. Expectancy violation and interpersonal adaptation theories (Burgoon, Stern, & Dillman, 1995) are also relevant: Even though the theories highlight reciprocity and the evaluations of others (not goal detection), the current data are consistent with them because detectors paid particular attention to pursuers' tactical efficiency for the specific information-seeking goal given an inadequately diagnostic context. In the words of the two theories, pursuing the specific goal in an initial interaction likely violates expectations and "heightens attention to sender and message characteristics" (p. 95). The current framework is applicable to extant scholarship in the broader areas of message production and processing.

Theoretical Purview

Although the experiments focused exclusively on information seeking in initial interactions, the theoretical framework is not limited to this domain. Rather, the framework's general principle (referred to as the integration principle) that tactics' diagnosticity is beneficial for the accuracy of goal detection only when the context provides no useful links to the true goal can apply to a variety of contexts. For example, what a male customer says to a female clerk can facilitate the clerk's inference of a date-request goal he seeks, assuming the goal is relatively rare in grocery

stores; but what he says is likely superfluous when his goal is to find a certain product. Likewise, a teacher's efficiency will only increase a student's accuracy if the classroom context inadequately restricts inferable goals to the teacher's true goal. The framework is relevant beyond the current setting, but future research should aim to demonstrate this directly, especially because the generalizability of the two experiments is not infallible (as subsequently discussed).

Limitations

The experiment suffered from at least three limitations. First, generalizability is questionable. Because the experiments tested goal detection in initial interactions, extending results beyond that arena is difficult. Results from Experiments 1 and 2 should be considered with this limitation in mind, and future research should address it. For example, conversations between close friends could be compared to initial interactions. In fact, the results of such an experiment are consistent with the theoretical framework. Efficiency increases accuracy only if the relational type is not strongly associated with pursuer's goal: When the true goal is strongly linked to a dyad's unacquainted relational type, efficiency is unrelated to accuracy; but if someone pursues the same goal in an interaction with a close friend (a relational type not strongly linked to the goal), then efficiency boosts accuracy (Palomares, in press). This experiment also moves beyond information-seeking objectives by employing compliance-gaining and relational goals. Even still, interpreting the current data in terms of noninitial interactions and non-information-seeking goals must be done cautiously, especially given other factors (e.g., history, schemata) that might be unique to a particular relationship.

Another limitation is that the accuracy results are limited to the extent that detectors were able to articulate their goal inferences. Inferences can occur outside of awareness. Research on behavioral goals (e.g., swimming, make dinner), for example, showed that people automatically inferred others' goals without conscious awareness (Hassin et al., 2005). Even though this work focused on goals in nonconversational settings, it still suggests that detecting interaction goals might also occur implicitly. Perhaps detectors were unable to verbalize (i.e., write) some inferences. Even so, participants were usually moderately accurate and at times highly accurate. Reading comprehension research also suggests that goal inferences are conscious by showing readers can articulate characters' goals (Trabasso & Magliano, 1996). Explicit goal inferences are even similar to their unconscious counterparts (Dik & Aarts, 2007). Future experiments, nonetheless, might employ implicit measures (e.g., word recall/recognition, sentence completion, or lexical decision tasks) in lieu of or in conjunction with explicit measures.

A third limitation deals with the onset latency measure. Onset's operationalization relied on self-reports of the approximate moment of a goal inference decision. The

ability to make such an assessment may be cognitively constrained. Alternative operationalizations of onset latency exist, but these introduce a different set of limitations. Participants, for example, could have watched the videotaped recording of their interaction to indicate when they made their goal inference, which is akin to how Keck and Samp (2007) measured goal importance in conflict situations and how Waldron (1990) investigated goal priority and complexity in planning. This method, however, is limited because detectors could reinterpret their cointeractant's behavior in terms of their goal inference that might conceal the actual time of onset. Detectors, in other words, might indicate onset using behavioral cues from the pursuer that they originally ignored or overlooked. Another means to assess onset is to have detectors signal the moment they make a goal inference online during the actual interaction (e.g., pressing a button). This method also is problematic because it predisposes detectors to be vigilant in goal detection. Furthermore, a real-time measure of onset may create a cognitive load for detectors (i.e., interact, detect a goal, remember to click a button). As these and other methods introduce unique limitations, future research might employ a multimethod approach to assess inference onset latency via operational triangulation.

Practical Implications

The significant negative correlation between detectors' accuracy and their suspicion in others' motives has pragmatic implications. Untrusting people likely misinterpret cointeractant's behavior and perhaps even construe it negatively. Thus, setting aside negative inferences when they are unwarranted might behoove skeptics; yet, the present research did not examine the type of goals skeptics inferred. Although skeptics tended to be relatively inaccurate, the assertion that they inferred malevolent goals in lieu of benign goals has yet to be confirmed and so is ripe for continued research. Moreover, suspicion might not always lead to inaccurate goal inferences. In developed relationships such as colleagues, for example, detectors could be especially suspicious with a certain individual based on past experience and thus tend to be accurate given their inclination to infer negative goals (e.g., promote self-interest) under most circumstances. Anecdotes also indicate conversations wherein someone's stated goal is a red herring to conceal her or his true objective. In fact, overt goal statements such as, "I'm only trying to help you," "I'm just kidding," or "I am not trying to be nosey" may be used to hide more antisocial objectives such as taking advantage, humiliating, and prying, respectively. Yet, person-perception research found that the use of a disclaimer to ward off negative trait inferences (e.g., arrogance, laziness) actually increased inferences of the disclaimed traits if a trait-consistent comment followed the disclaimer (El-Alayli, Myers, Petersen, & Lystad, 2008). A similar effect might be true for goal detection particularly among skeptics: The odds that a ruse will stymie detectors likely

decrease as their suspicion increases. This potential suggests a conceptual distinction between accuracy and what could be called correspondence or superficial accuracy. Whereas accuracy is the similarity between a pursuer's true goal and a detector's inferred goal, correspondence is the similarity between stated and inferred goals. In interactions with goal subterfuge, suspicion may be negatively associated with correspondence but positively correlated with accuracy.

Although detectors' suspicion was inversely related to accuracy, that correlation may be of no consequence for competency: Pursuers' ratings of detectors' competence were unrelated to detectors' accuracy, which is inconsistent with a previously found positive correlation between participants' judgments of their conversation partner's competence and sensitivity to their goals (Lakey & Canary, 2002). The current research is a relatively more direct and legitimate test of the claim that accuracy affects competence, but it did not examine close relationships as Lakey and Canary did. A difference in relational intimacy might explain the inconsistency. Even still, detectors' ratings of pursuers' competence were related to accuracy (in Experiment 1). Thus, competence as an outcome of goal detection seems more probable for pursuers' than detectors' competence. These implications, however, assume that accuracy affected detectors' competence judgment of pursuers (not vice versa) and that the correlation was nonspurious, neither of which the current data can address. Pursuers' trait level of communicative competence, for example, may have increased detectors' accuracy, as well as the extent to which detectors judged them as competent, which is of particular concern in light of the confederate effects on competence in Experiment 2. Thus, future research should control for trait competence and even manipulate accuracy or competence to disambiguate accuracy-competence relationships.

Conclusion

Goal detection is an integral part of social interaction theory and research; yet, to date only a dearth of exceptions has directed conceptual and empirical attention to this process. The data fit well with the proposed theoretical framework on goal detection, were consistent with past research that previously tested the framework (Palomares, 2008), and offered new insights. The research also opened avenues of new research opportunities. Continued research on the goal detection process will help obtain a comprehensive understanding of message production and processing in social interaction and interpersonal communication.

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