Good Stranger Diagnostic Tool: Measuring Capacities and Limitations to Inform Training

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ABSTRACT

US military personnel can function as "Good Strangers" (GS), cultivating co-operation and safety with civilians, or they can act in ways that increase hostility. Current work investigates the dynamics of social interactions and training technologies attempting to increase positive outcomes of military social encounters. Soldiers at Ft. Benning completed the GS Diagnostic Tool measuring the GS cognitive frame and its strategic, behavioral and affect components. First, we examined differences between a GS frame and other cognitive frames: Mission, Rules/Procedures, and Authority. Next, we investigated priorities for tactics and skills: Perspective Taking, De-escalation, Building Rapport, Voluntary Compliance, and Security. Finally, we assessed confidence and competence levels for the tactics listed above. We found differences among warfighters as well as significant relationships among frame preference, response tendencies, and competencies. The research suggests how social interaction training might be most effective when addressing gaps between initial capacities of the learner and GS essentials.

KEYWORDS

Decision Making, Military, Macrocognition, Adaptive Learning, Counter Insurgency

INTRODUCTION

Individuals differ widely in their previous experiences, learned knowledge, and acquired skills. In training contexts, these differences are critical because they may impact an individual's ability to learn and apply the training content. Most approaches including traditional rule-based training fall short because they require trainees to work through the same material in succession. This one-size-fits-all approach is unable to accommodate individual differences.

Adaptive training methods (e.g., intelligent tutoring systems) can accommodate individual differences either by adjusting trainee starting points and/or adapting training content or level of difficulty based on real-time trainee performance. Ongoing advances in computer-based instructional technology have revolutionized the delivery of training. They have also facilitated training for more complex cognitive capacities, such as cultural awareness and social competencies (Raybourn, 2005). One reason for this is that adaptive instruction can individualize training by adjusting to the learner's baseline and can continually accommodate incremental advances in their knowledge/skill. Learners can receive a stream of feedback about their performance to enhance their decision making capabilities and improve their understanding. The purpose of this paper is to introduce the Good Stranger Diagnostic Tool, a cognitive and social competence assessment tool, as a prototype to support advances in adaptive learning and training in the military sector.

Good Stranger Project

The primary competence of warfighters is to engage in combat with adversaries, and the necessary skills to achieve that outcome is to master tactics, techniques and procedures for handling a range of weapons systems and for dominating tactical and strategic operations. However, warfighters also must interact with civilians in a way that accomplishes their mission without creating unnecessary antagonism. In recent conflicts in Afghanistan and Iraq, US military forces have fallen short of this objective. Because of this, The Defense Advanced Research Projects Agency (DARPA) created the Strategic Social Interaction Modules (SSIM) program to develop innovative, cost effective methods to train the social skills necessary for positive encounters with civilians in military settings. The program was nicknamed the Good Stranger (GS) project.

Good Stranger Frame

As part of this initiative, we sought to identify and define the target social skills required for positive military-civilian encounters. Because of the unique demands facing military personnel during foreign deployments, we needed to go beyond the expansive literature on "soft" methods of persuasion and influence (e.g., Cialdini, 1993; Thompson & Jenkins, 1993/2004; Glennon, 2010; Wilson, 2011; Thaler & Sunstein, 2008). For this reason, we conducted Cognitive Task Analysis (CTA; G. Klein, Calderwood & MacGregor, 1989; Crandall, Klein & Hoffman, 2006) interviews with over forty military and police personnel to better understand what basic skills are needed to foster constructive social encounters, regardless of language and cultural barriers, in high-risk

environments. During the CTA interviews, we tried to unravel the cognitive themes that successful military and police officers used to make sense of their surrounding. We included police personnel because they face many of the same challenges as warfighters, such as community policing. Our findings indicated that certain behavioral and cognitive strategies were strong predictors of building trust and conducive to being a GS, namely building rapport, de-escalating, perspective taking, and preferring voluntary compliance (G. Klein, H. A. Klein, Lande, Borders & Whitacre, 2014b). As a result, we formulated an empirical model (see Figure 1) centered on the process of building trust. These strategies are behavioral extensions of the GS cognitive frame.

Our CTA interviews with police and military personnel also identified substantial individual differences in preference for taking the perspective of others, building rapport, and de-escalating conflicts (G. Klein, H. A. Klein, Lande, Borders & Whitacre, 2014a). The GS strategies were not rule-based or procedural. They depended on cognition – making sense of complex situations and creating solutions dependent on situational contexts. The interviewees also seemed to differ in their skill in implementing these strategies. Interviewees who showed greater skill in implementing these strategies were more likely to build trust with civilians and community leaders. These cognitive skills and receptivity to new ideas are basic to the GS cognitive frame. Some interviewees appeared more equipped to build trust with civilians and community leaders while others did not use this cognitive frame when sizing up situations. This variability makes a standardized program of instruction difficult.

Cognitive Frames

The type of cognitive frame a person employs significantly influences how they perceive their environment. A frame will affect the type of cues they spot, expectancies they generate and which goals they attempt to pursue (See Figure 1). Using the data/frame model of sensemaking (G. Klein, Moon & Hoffman, 2006a, 2006b), we examined how military and police personnel varied in the type of cognitive frame(s) they possessed and employed to make sense of their surroundings. Using our CTA interviews, we identified three prominent cognitive frames in addition to the GS frame that military personnel use to make sense of situations: Rules and Procedures, Mission and Authority.

Rules and Procedures Frame

Organizations with mechanistic structures contain hierarchical arrangements and centralized decision making processes (e.g., military, police force). This type of environment causes organizational members to think in a rigid operational way. Military personnel are trained to adhere to rules and procedures and rely on these guidelines in times of uncertainty. Rules and Procedures orient warfighters to follow protocol and avoid deviating from these rules as their highest priority. In combat, rules and procedures are critical because they prioritize safety and security. This frame can be used in co-ordination with other frames. Warfighters, for example, may follow all relevant rules and procedures while working towards mission completion.

Mission Frame

Some warfighters see their assigned mission as the driving force behind all decisions and actions. They do not rely as heavily on a GS or Rules and Procedures frame to gauge situations. Instead, they depend on creativity and strategic thinking in an attempt to optimize mission completion. The Mission-oriented approach can also use other frames to make sense of the situation and act in an effective manner while promoting mission completion.

Authority Frame

Security is an essential component of the warfighter's worldview. However, some high security-minded individuals may exaggerate this approach and become domineering. These warfighters use their authority to gain compliance from others and they do not hesitate to use coercion. They also tend to escalate situations because they take provocations personally. The Authority frame promotes resentment and distrust among community members, and sometimes yields unfavorable long-term consequences for military and police forces.
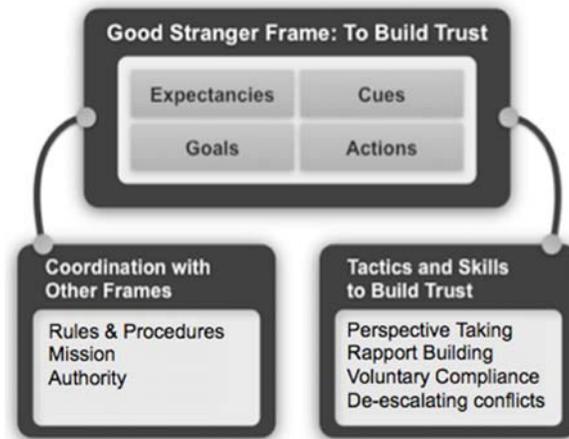
Figure 1. The Good Stranger Frame: To Building Trust

These frames are not mutually exclusive and situational demands influence the frame being used. Kinetic encounters involving hostile enemies demand an Authority or Rules and Procedure frame. For example, the cues, goals, expectancies and actions differ when needing to protect one's life or the lives of others than when wanting to gain trust with community leaders and/or civilians. In peacekeeping environments, one would benefit from maintaining a GS frame to build trust with a community, rather than seeking ways to manipulate and control with an Authoritarian frame. We expect that all warfighters are concerned with self-protection and most use a Mission and/or a Rules and Procedure frame. Some possess elements or the complete GS frame. Military personnel with a GS frame differ from the others in the way that they appreciate means of gaining voluntary compliance, the way they engage in perspective taking, and the way they react to cultural differences – being more sympathetic, curious, and adaptable as opposed to being judgmental and ethnocentric.

The Good Stranger Diagnostic Tool

The centerpiece of the DARPA SSIM initiative is to develop a high fidelity simulation experience that greatly advances the state of the art for personal interactions with computer agents, allowing trainees to conduct realistic encounters and receive natural feedback when they behave appropriately and inappropriately. Our objective was to develop and contribute a cost effective and comprehensive diagnostic tool that can support the SSIM initiative in multiple ways. For example, a scenario-based diagnostic assessment could support this training by identifying personnel who would benefit most/least from the simulation training intervention. A diagnostic tool could also be used to identify trainee strengths and weaknesses regarding specific training objectives. This information can help determine training content, difficulty and initial starting conditions. In addition to these objectives, we defined a set of requirements for the GS Diagnostic Tool.

The assessment tool must describe a participant's potential to become a GS and also reveal the cognitive and behavioral "gaps" between the participant and the GS frame. These gaps can then become the basis for individualized training. On the other end, the diagnostic assessment should also identify trainees whose existing cognitive frame and behavioral patterns are simply too difficult, costly, or even impossible to alter (e.g., extremely authoritarian). Trainees can be filtered using the frames described above and in Table 1 to guide trainee selection. The GS Diagnostic Tool depends on several elements. The tool should assess the trainee's knowledge regarding tactics and skills needed for effective social interactions (i.e., perspective taking, rapport building, gaining voluntary compliance and de-escalating). These skills are critical for increasing trust during social interactions (see Table 2). Finally, the tool should assess the confidence needed to successfully implement these tactics and skills in the field. All of this information can be continually updated during training, so, from the learner's perspective, they will always be moving forward to new and needed content.

In sum, the GS Diagnostic Tool must be able to assess the presence of a GS Frame and the understanding of the GS tactics and skills. To be most beneficial, it must also be able to assess if the learner knows how and when to implement these skills, rather than taking a security approach. Finally, it needs to gauge if the learner has the confidence to implement the skills when needed. The following investigation was an initial attempt to assess the likelihood of satisfying these requirements.

METHOD

Participants

We collected data from non-commissioned Army soldiers enrolled in the Henry Caro Academy (Infantry Senior Leader Course) at Ft. Benning, GA (*N* = 78). All Soldiers were male, ranked E 6 – Staff Sergeant (66%) or E 7 – Sergeant First Class (34%), and had at least one overseas deployment.

Participants reviewed the consent form while research personnel explained their rights as research participants as defined by the Institutional Review Board (IRB). Next, participants individually completed the three-part GS Diagnostic tool (described in full below), as research personnel facilitated each section. Upon completion, participants received a debriefing form and a brief explanation of the SSIM initiative and the purpose of the GS Diagnostic Tool. The described procedures were in accordance with both MacroCognition's IRB policy and procedures and those of the US Army Human Research Protection Office (HRPO).

Research Measures

Cognitive Frames Assessment
Participants read ten brief military-based scenarios and responded to prompts by ranking alternatives (1 = most important, 4 = least important). For each question, participants could only indicate one option as their (1) most important, and so on. This assessment examined the prominence of four cognitive frames (see Table 1). Each response option manifested one of the four cognitive frames.

Table 1

Cognitive Frame Types and Descriptions	
Good Stranger	Tries to gain trust; understands long term consequences of action
Mission	Makes decisions that optimize mission completion
Rules and Procedure	Tries to follow protocol and avoid deviating from rules
Authority	Uses authority to gain compliance; does not hesitate to use coercion

Tactics and skills
The next section presented five complex military-based scenarios, with multiple decision points interspersed throughout each scenario. This section required participants to rank response priorities and confidence levels in performing actions related to tactics and skills we've identified as most conducive to the GS mindset – Perspective Taking, De-escalation, Building Rapport, Voluntary Compliance. We also included Security, because this approach is critical for warfighters, and cannot be ignored (see Table 2). At each decision point, participants were required to rank order (1 = most important, 4 = least important) four of the tactics and skills. Participants could only indicate one of the options as their (1) most important. Perspective Taking was assessed at each decision point using a separate Likert Scale because this tactic is more cognitive based and was not easily comparable to the other skills listed. At each decision point, participants also indicated their confidence for each of the four tactics (excluding Perspective Taking) and skills using a Likert Scale (1 = very confident, 5 = not confident at all).

Table 2

Learning Objectives and Descriptions	
Perspective Taking	Sees the world from other's perspectives and uses this to understand the actions of others
De-escalation	Reduces the intensity of situations or conflicts; remains calm and helps others to move towards calm
Building Rapport	Works to develop a positive relationships with others to accomplish tasks
Voluntary Compliance	Seeks voluntary rather than coercive compliance by understanding others and using socials skills
Security	Considers security as most importance when assessing situational demands

Ability Assessment
The last section examined how accurately participants understood the behaviors that supported the skills and tactics they encountered in the previous section (see Table 2). For example, to assess De-escalation, participants were asked to reflect on an earlier scenario and indicate the effective and ineffective strategies to accomplish the goals (e.g., calming down a crowd). Participants indicated their judgment of effective and ineffective strategies by selecting from a list of four choices. There were two optimal and two incorrect choices within the lists. Participants completed 12 Ability questions. Based on a participant's percent correct, they were assigned an overall Ability score, which indicates their competency for the skills and tactics listed in Table 2.

RESULTS

Baseline Assessment – Cognitive Frame Preference

Our initial objective was to examine this sample's frame preferences, as a whole. To generate a basic frame preference outlook, we combined individual frame rankings across each of the ten frame questions. Using these overall frame preference scores, we calculated group averages for each cognitive frame. The highest possible

score was 40. GS was the most preferred frame type ($M = 29.22$, $SD = 3.71$) across all ten scenarios, followed closely by Rules & Procedures ($M = 28.58$, $SD = 3.71$). The Mission frame was ranked lower ($M = 25.19$, $SD = 3.03$) and Authoritarian was the least preferred frame type overall ($M = 17.03$, $SD = 3.91$).

Frame Type Predicts Response Tendencies

Next, we looked for relationships between frame preferences and prioritization, confidence levels and Ability scores for the tactics and skills. Our goal was to understand whether response tendencies were related to the cognitive frame preference. Because this was an exploratory study, we used correlational analyses to test for association between the variables listed in Tables 1 and 2. Later, we will apply these associative links to relevant implications for training.

Good Stranger Frame

As expected, participants preferring the GS frame were more likely to use the tactics and skills related to building trust, instead of security. The GS frame was associated with increased priority for De-escalation, $r = .25$, $p < .05$ and Building Rapport, $r = .32$, $p = < .01$, and decreased priority for Security, $r = -.38$, $p = < .01$.

Mission Frame

Similar to the GS Frame, participants that highly prioritized the Mission frame demonstrated decreased priority for Security responses, $r = -.28$, $p < .05$. They also showed increased competence for the GS skills and tactics listed in Table 2, $r = .27$, $p < .05$.

Authoritarian Frame

Participants that highly prioritized the Authoritarian frame also highly prioritized security responses, rather than preferring GS tactics and skills. High Authoritarian frame scores were significantly associated with high prioritization of Security, $r = -.38$, $p < .001$. The Authoritarian frame was also significantly correlated with decreased priority for Perspective Taking, $r = -.23$, $p < .05$, Building Rapport, and lower overall Ability Scores, $r = -.35$, $p < .05$.

Rules & Procedures Frame

Interestingly, participants with high Rules and Procedures frame preference reported lower confidence ratings for De-escalation, $r = -.28$, $p < .05$, Voluntary Compliance, $r = -.23$, $p < .05$, and Security, $r = -.27$, $p < .05$. These individuals were not confident in performing any these skills and tactics.

DISCUSSION

Theoretical Contributions

The results of this study further confirm the link between the GS frame and certain trust-building tactics, such as building rapport, gaining voluntary compliance and de-escalation. Using short scenario-based assessments, we can identity participants that prefer to use this frame in social encounters. GS frame preference significantly predicted De-escalation and Building Rapport, and negatively predicted excessive Security. Using the GS Diagnostic Tool, we found that other frame types, like the Authoritarian frame, significantly predict decreased prioritization and understanding of certain trust-building tactics, such as De-escalation and Building Rapport. These relationships are consistent with previous SSIM research, investigating the GS concept and trust-building tactics (G. Klein et al., 2014a, 2014b).

Training Implications

The GS Diagnostic Tool can provide a description of the learner's initial cognitive frame, response tendencies, and understanding for certain behavioral tactics. Adaptive learning technologies, such as serious game simulators, can use this information to generate individualized learning conditions in order to augment training effectiveness. More specifically, using the cognitive frame assessment, we believe training systems can modify initial starting conditions and how training content can be presented. This can be accomplished by presenting ability-graded examples and/or additional practice as needed. We propose the following training recommendations based on our empirical findings.

Participants that preferred the GS and/or Mission frame demonstrated similar response patterns. Both highly prioritized the GS social tactics and skills, and these participants also showed increased understanding for the GS social skills. Because of this, warfighters preferring these frames would benefit from accelerated training. Importantly, this training would also require trainees to make decisions about appropriate times to initiate GS tactics vs. taking a security oriented approach and vice versa. On average, this sample displayed more GS proclivities than we expected. There is an assumption that the GS approach is out of sync with the conventional warfighter's psyche. However, this data suggests otherwise. The group, on average, preferred responding with actions in line with the GS frame, suggesting that the GS training strategies being developed in the SSIM program may not be as difficult to employ as many expected.

Not surprisingly, this group showed almost equally strong preference for the Rules and Procedure frame. They highly prioritized actions that insisted on following rules, which is characteristic of hierarchical organizations,

such as the military. However, complex and turbulent situations require warfighters to think beyond the simple procedures that are oftentimes futile in these environments. Our findings suggest that this group may not manage chaotic situations effectively. Participants preferring the Rules and Procedure frame also showed lower confidence ratings for social tactics and skills (i.e., De-escalation and Voluntary Compliance) and security-based items. Military personnel that strongly prefer a Rules and Procedure frame may benefit from feedback supporting confidence development when needed. This feedback can provide warfighters with the positive assurance needed when making effective decisions regarding security and social tactics (e.g., building trust).

While some warfighters preferred the GS frame and/or can switch frames depending on the situation they encounter, others may be unable to adopt a GS frame. Military personnel that prefer a domineering approach may need explicit rule-based training to reduce provocations when they are in contact with civilians. Participants that preferred the Authoritarian frame were more likely to prioritize security over the social tactics and skills, regardless of the situational demands. Specifically, our results indicate they were less likely to prioritize Perspective Taking and Building Rapport. Both of these dimensions are strongly linked to empathy, the ability to recognize and share other's feelings, which Field Manual 6-22 *Army Leadership* indicates as a critical tool in winning support from populations (U.S. Army, 2006). Those who prefer the Authoritarian frame might best be directed to positions that do not require interactions with civilians. Instead, these warfighters would be better suited in positions involving clearly defined rules such as defense and security.

Limitations

Further iterations are needed to construct effective frame scenarios and response options. To our surprise, most participants preferred the GS frame when making sense of situations. While this may be reflective of our sample, we are skeptical that this represents the population as a whole. We suspect some participants were able to see patterns in the response options and attempted to respond how they *should* rather than how they actually *would*. These demand characteristics can be avoided by creating credible options that are not obviously right or wrong.

This sample included non-commissioned officers ranking E6-E7 in the US Army. The outcomes provide a specific frame of reference for this group. We caution generalizing these findings to all military personnel, NCOs, or E6-E7s. To make these assumptions, we would need to develop a more comprehensive diagnostic tool, and construct a more rigorous study design. More testing would be needed to describe potential group differences.

The sample included students enrolled in a senior leadership course. Data collection occurred when all participants had a major test in their senior leadership course scheduled later in the day. Due to scheduling issues, participants had less time to complete the study than we anticipated (1.5 instead of 2 hours). Although over 161 participants attended the study session, approximately two-thirds of the sample completed all three sections of the GS Diagnostic Tool. In order to accurately assess outcomes, we only included participants who had completed every question for each segment. Despite these problems, we identified important training implications.

The GS Diagnostic Tool was able to diagnose individual frame preferences, response tendencies, and levels of confidence and ability for specific tactics and skills. This information can assist computer based instructional systems to deliver effective training, accommodating individual ability strengths and limitations. While additional research is needed, particularly exploring the validity of the measures used, we believe some components of our study can be incorporated into ongoing training efforts to augment effectiveness.

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