PERSUASIVE MESSAGE STRATEGY
FOR INTERNATIONAL DEVELOPMENT CAMPAIGNS:
A THEORETICAL APPLICATION OF
THE GALILEO SPATIAL-LINKAGE MODEL

by

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October 23, 2008

A dissertation submitted to the
Faculty of the Graduate School of
the University at Buffalo, State University of New York
in partial fulfillment of the requirements for the
degree of

Doctor of Philosophy

Department of Communication

UMI Number: 3342134

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To my lovely wife, Sejeong

Acknowledgement

I would like to take this opportunity to thank all the people who have supported me to complete this dissertation. First of all, I am very grateful to my mentor, Dr. George A. Barnett, for his scholarly advice and continuous encouragement throughout my doctoral program. His academic enthusiasm and passion has been an inspiration for me. I would also like to sincerely thank my committee members, Drs. Frank Tutzauer, and Joseph Woelfel for their insightful comments and suggestions. I have learned a lot from their invaluable advice. I will be forever grateful to my committee members.

In addition, I would like to acknowledge others who have helped me for this dissertation. I am very grateful to COM101 director, Brian J. Reynolds for helping surveys for this dissertation. Without his kindness and consideration, I could not gather any data for this work. Also, I am very thankful to my colleagues, Hao Chen and Carolyn Evans for their kindness and technical advice. For their helps, I could analyze my data and interpret them at easier. I would like to specially thank a great friend, Shin-il Moon, for his continuous supports and intellectual discussions. I have been fortunate to get along with him during my doctoral program.

Finally, I am grateful to my wife and my families for their unconditional love, belief, and support. I will be forever indebted to them. My lovely two sons have been a great energy source for me.

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Abstract

This dissertation explores a persuasive communication strategy for international development campaigns (IDCs) by considering the interattitude structures of the target audiences using the Galileo spatial-linkage model. Traditional studies of charity campaigns have usually overlooked the dynamics of interattitude structure and have focused on message framing rather than message content. This dissertation overcomes the limitations through the application of the Galileo model that considers the dynamic process of attitude formation and change. It represents the interattitude structure within a spatial coordinate system. Also, the message-optimizing procedure of the Galileo analysis guides the creation of quality messages. A persuasive message strategy for IDCs was suggested in this study. Considering several consistent concepts (education, health, and human rights) that are closely associated with the target audiences' selves in the Galileo space, the recommended message strategy for attitude change emphasizes the close relationships between international aid and the relevant concepts. Message effectiveness was examined. The results supported a significant effect of the Galileo message. The messages moved the concept of international aid close to the self-concept. That is, the persuasive message for IDCs facilitated positive attitude change toward international aid by enhancing the interrelationships among the concepts. In addition, the study supported the theoretical validity of the Galileo model that predicts future behaviors. Also, the results revealed that the attitude measure that considers interattitude structures is better than the direct attitude measure with social-desirability bias.

Chapter I. Introduction

Public communication campaigns aim to persuade or motivate desirable behavioral changes in a large number of people within a specified time period by using organized communication activities (Rogers & Storey, 1987). To achieve this goal, campaign messages are designed to persuade target audiences by providing more information on the topic. Persuasive campaign messages assume that attitude change will result in desirable behavior change. This is based on a general belief that attitudes are strongly related to behavior. For this reason, public campaign practitioners seeking a persuasive message strategy consider targets' attitudes toward the desirable behavior.

International development campaigns (IDCs) have tried to enhance public support in the fight against global poverty. Specifically, they have been designed to increase public awareness and improve the efficiency of global cooperation on the basis of public support (McDonnell, 2004). This is the same as general charity campaigns' substantial goals, public awareness and practical participation (Doddington, Jones, & Miller, 1994). That is, international development campaigns attempt to persuade people to regard global poverty as a critical issue rather than others' troubles unrelated to people's own lives. These campaigns also try to promote practical activities, such as monetary donations, volunteering, and support for global cooperation policies.

Eayrs and Ellis (1990) indicated a dilemma of the relationships between positive public awareness and practical prosocial behaviors. Through examining the effects of charity campaigns for the disabled, the researchers found that donating behaviors are negatively related to positive portrayals describing handicapped people as having the same rights, value, and capability as nonhandicapped people. Conversely, negative portrayals that illustrate the disabled as being helpless and hopeless are associated with a strong intention to donate because such portrayals are

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more likely to elicit feelings of guilt and sympathy. That is, although charity campaign practitioners are willing to design their campaigns to accomplish both positive public awareness and practical help, on a realistic basis, it seems to be difficult for practitioners to create campaigns that are commensurate with substantial goals.

Traditionally, international development campaigns have used negatively framed messages. The campaigns have usually described the recipients as helpless and hopeless. The reason practitioners use negative campaign strategies can be explained by the negative state relief model (Cialdini, Darby, & Vincent, 1973). According to this model, people who experience feelings of guilt through negative messages have an unpleasant emotional state, so they seek relief from the bad feelings. In this situation, people will be motivated to participate in charity campaigns because the prosocial behavior reduces feelings of guilt and supports a balanced emotional state. Thus, most charity campaign agencies are more likely to use negative campaign strategies to promote practical participation at the expense of positive public awareness.

However, it is not certain that emotionally and negatively framed messages strongly affect helping behaviors. Doddington and colleagues (1994) reported that positive portrayals possibly encourage donating behaviors because the effects of positive portrayals are not significantly different from the effects of negative portrayals. Barnett and Hammond (1999) also noted the ambiguous relationship between negative campaigns and donating behaviors. Mitchell, Brown, Morris-Villagran, and Villagran (2001) argued that emotional appeals on persuasive message processing are not crucial. Moreover, the researchers asserted that the negative state relief model cannot be supported in the cognitive processing of persuasive messages. Although recent studies have supported the positive consequence of emotional appeals through negatively

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framed campaigns (Hibbert, Smith, Davies, & Ireland, 2007; Massi, 2005), the studies'
ambiguity is not easily discounted. Prior studies on negative message framing used different
theoretical models, experimental treatments, concepts, and variables. Therefore, it is difficult to
judge how negatively and emotionally framed messages precisely affect helping behaviors.

The negative message strategy has another limitation, even if the strategy has powerful
effects on prosocial behaviors. Traditional aid campaigns describing the recipients as helpless
and hopeless can reinforce prejudice and negative stereotypes about the recipients and their
group (Barnett & Hammond, 1999; Bozinoff & Ghingold, 1983; Doddington et al., 1994). That
is, negatively framed messages adversely influence future behaviors, even though the message
strategy seems to increase short-term, one-time participation. Godwin (1994) asserted that the
negative message strategy may obstruct efforts to persuade people to participate in international
development campaigns. Negative images from long-term campaigns facilitate a negative bias in
potential donors. They blame the poor rather than gain sympathy for them. Likewise, biased
donors believe that poverty is caused by the poor themselves due to personal traits, such as
laziness. Thus, such biased donors feel uncomfortable helping the poor. Several studies have
indicated the manifestations of donor bias in international development campaigns. Campbell,
Carr, and Maclachlan (2001) noted that people in a developed country, such as Australia, are
more likely to attribute poverty to personal characteristics of the poor than do people in a
developing county, such as Malawi. Recently, Bolitho, Carr, and Fletcher (2007) supported this
finding. They reported that Australians and Malawians make significantly different attributions
for poverty. Australians blame poverty more on the poor themselves, while Malawians blame
poverty more on situations.

Purpose of the Study

This dissertation explores a persuasive communication message strategy for international development campaigns. Traditional charity campaigns have generally used a negative message frame that elicits feelings of guilt and sympathy to promote practical participation in aid projects. However, as previously noted, the traditional message strategy has several limitations. The emotional message frames seem to be ambiguous. Also, the negative message strategy can cause donor bias that negatively affects future helping behaviors. Such problems are likely to arouse suspicion about the effectiveness of traditional charity campaigns. This dissertation tries to find an alternative solution that overcomes the limitations of traditional message-framing strategies.

This study starts from two theoretical criticisms of message frame research. First, message-framing studies have focused on the stimulative forms of messages rather than quality message content. In this research trend, positive public awareness, which is a substantial goal of charity campaigns, can be easily ignored. Also, the possibility that emotionally and negatively oriented messages mislead people into negative bias about recipients has been overlooked. Thus, this study centers on how to construct persuasive messages with quality content that considers positive public awareness.

Second, the emotional message strategy has been based on a specific perspective about attitude. That is, the studies of emotional appeals have a basic assumption that an attitude can be formed from feelings toward an attitude object. Although it is generally accepted that emotion is an important factor of attitude formation, attitudes cannot be simply explained by emotional reactions. At this point, this study requires a thorough literature review of attitude before exploring a persuasive message strategy for international development campaigns.

Chapter II. Interattitude Structure and the Galileo Spatial-linkage Model

Interattitude Structure

Conceptualization of Attitude

Attitude is the most fundamental psychological construct. It provides a crucial guide to explaining human behaviors and social phenomena. Eagly and Chaiken (1993, 2007) have suggested an inclusive conceptualization of attitude. According to them, an attitude is "a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor" (Eagly & Chaiken, 1993, p. 1). There are three essential elements: entity (attitude object), evaluation, and tendency. An entity can be regarded as an attitude object that "yields the stimuli that elicit the evaluative responses that psychologists identify as attitudinal" (Eagly & Chaiken, 2007, p. 583). Entity refers to anything that can be designated, such as concrete objects (e.g., houses, cars, and dogs), abstract objects (e.g., freedom, power, and peace), or attributes (e.g., good, bad, and poor) (Eagly & Chaiken, 2007; Woelfel & Stoyanoff, 2007). In the discipline of communication, these objects can be considered symbols constructed socially and culturally (Barnett & Woelfel, 1988; Woelfel & Fink, 1980).

Evaluation is a comprehensive set of reactions to an attitude object. Evaluation encompasses all aspects of evaluative responding, including beliefs, feelings, and behaviors (Eagly & Chaiken, 2007). Traditionally, attitudes are based on three types of evaluative aspects: cognition, affect, and behavior (Katz & Stotland, 1959; Rosenberg & Hovland, 1960). Cognitions are beliefs about an attitude object that is associated with a given attribute. Attribution theory might be a representative perspective that examines an attitude on the basis of cognitions. Affects are emotional reactions to an attitude object. The studies of emotional message frames emphasize the impacts of the feelings toward an attitude object in the attitude

formation process. Behaviors are obvious actions of people. Bem (1972) asserted that an attitude toward an object can be inferred on the basis of past behaviors. Zanna and Rempel (1988) noted that attitudes can manifest themselves, regardless of agreement among the evaluative sources, from one source or any combination. That is, attitudes manifest themselves through cognitive, affective, and behavioral evaluation processes, but there is no assumption about which source is dominant.

Lastly, tendency is a characteristic feature of attitudes. Traditionally, past experience establishes a tendency to evaluate. Although Krech and Crutchfield (1948) defined attitudes as the enduring organization of various evaluations responding with respect to past experience, Eagly and Chaiken (2007) argued that attitudes are neither permanent nor temporary. Some attitudes can be permanently lasting, but others seem to be momentary. For this reason, the researchers suggest tendency as an appropriate term rather than disposition, emphasizing permanence, or state, implying temporariness. Also, the term tendency considers unconscious processes that constitute attitude as well as conscious processes. That is, tendency indicates a broad conceptualization of attitude.

Interattitude Structure

Fazio (1990, 1995) defined attitudes as associations, represented in memory, between attitude objects and their evaluations. In this definition, evaluations can be represented as summary evaluations considering various associations, such as cognitive, affective, and behavioral, through individual experience. An attitude can be shown as a simple two-node network with one node representing an attitude object, another representing the evaluation, and the link the strength between two nodes (Fabrigar, MacDonald, & Wegener, 2005; Fazio, 1995). These attitudes also make up larger structures that link attitudes (Eagly & Chaiken, 1993).

An attitude toward an object is often associated with other attitudes toward different objects. If people are allergic to chicken, they might have a negative evaluation of Buffalo wings (e.g., "I do not like Buffalo wings."). If they also regard duck as a kind of chicken, their attitude toward duck cuisine might be negative (e.g., "I do not like duck either."). Likewise, an attitude can affect other attitudes. Moreover, attitudes might be interrelated with each other rather than isolated in an individual's mind.

Traditional attitude studies have focused on interattitude structures (Abelson & Rosenberg, 1958; Festinger, 1957; Heider, 1958). Specifically, balance theory (Heider, 1958) is the most representative in this domain. Balance theory regards the property of interattitude structure as cognitive-consistent processes that tend to maintain psychological balance (Eagly & Chaiken, 1993). Also, the researchers who follow the balance theory usually examined simple attitude structures that are relatively static. Although traditional attitude theories have tried to examine the dynamic processes of the interattitude structure, the theories have had difficulty capturing actual attitude change, which involves continuously ongoing processes.

Recent studies have focused on the dynamic implication of interattitude structures. Judd, Drake, Downing, and Kronsnick (1991) emphasized the dynamic properties of attitude structures that are memory structures with active implications for information processing:

Our fundamental argument is that such a structure of attitudes in long-term memory ought to have dynamic properties concerning information processing and retrieval, properties that characterize the structure of other non-evaluative pieces of information and judgments that are stored in long-term memory. The dynamic property documented in these studies is spreading activation. The notion of spreading activation posits that activation of one bit of information in memory increases the probability of activation of

another piece of information in memory to the extent that the two pieces of information

are linked in a memory structure. Accordingly, when a given attitude is retrieved from

memory, linked attitudes should become activated. (p. 200)

Similarly, Tourangeau, Rasinski, and D'Andrade (1991) supported this idea of spreading

activation by examining the interattitude structure toward abortion and welfare. Recently, to

examine attitude formation that depends on information learning processes, Eiser, Fazio, Stafford,

and Prescott (2003) suggested connectionist approaches based on biological properties of the

brain.

Connectionist Perspective

According to Van Overwalle and Siebler (2005), connectionist approaches have several

superior characteristics to traditional attitude research. First, adaptive learning processes are

intensively considered on the basis of natural neural systems in human brains. The learning

process can be analogous to the notion of spreading activation that novel information can be

adapted to an existing network structure (Eiser et al., 2003). After the adaptive information

process, the learning process also allows structural changes in the network by adjusting the

strength of the connections between attitudes. Through this mechanism, attitudes represented as

the associations between attitude objects and evaluations can be reconstructed.

Second, connectionists regard the interattitude structure as an organic structure with

highly interconnected networks rather than a hierarchical structure, which has been generally

accepted in attitude research. Dinauer and Fink (2005) indicated that hierarchical models have

some ambiguity based on their assumptions of isomorphism between attitude objects and

evaluation hierarchies as well as explicit top-down influences between attitudes. Also,

hierarchical models ignore the dynamic processing of attitude information and integrate different

evaluations of attitude objects into an overall attitude (Van Overwalle & Siebler, 2005). On the contrary, connectionists consider all kinds of evaluative reactions on the basis of the underlying mental mechanism. For this reason, a connectionist approach might help to examine implicit attitude formation and change without explicit conscious reasoning.

Finally, connectionists attempt to examine the psychological processes of real human beings rather than computerized ones. Traditional studies often described human rational processes as simple input-output relationships, in which a memory is considered a hard drive in a computer system and processing is unidirectional. Likewise, traditional computational or algebraic models have represented a low level of information processing. Conversely, without separation between memory and processing, "connectionist models naturally integrate long-term memory (i.e., connection weights) and short-term memory (i.e., internal activation) with outside information (i.e., external activation)" (Van Overwalle & Siebler, 2005, p. 233). These characteristics of the connectionist perspective are useful to better understand how attitudes form and change in the human mental mechanism.

Galileo Spatial-linkage Model

The Galileo spatial-linkage model (Woelfel & Fink, 1980) has the same theoretical perspective as the connectionist approaches (Dinauer & Fink, 2005). The model regards interattitude structures as neural networks, and represents the structures within a spatial coordinate system. In the model, an attitude toward a concept (an attitude object) can be elicited from the set of interrelationships defining the concept's proximity to all other concepts, and the attributions of the concept can be identified by its comparisons to others (Barnett, Serota, & Taylor, 1976; Barnett & Woelfel, 1988; Woelfel & Fink, 1980).

Categorization

The Galileo model considers the complex interrelationships among concepts in human brains (Woelfel & Fink, 1980; Woelfel & Saltiel, 1988). In psychological space, a concept has its close neighbors that describe the concept. Generally, the neighbors have strong connections to the focal concept. Although other concepts that are not its close neighbors are weakly connected or unrelated, the other concepts can have strong relationships with its neighbors. For example, think about a lemon. Its attribute concepts may be yellow, egg-shaped, and sour. They can be considered closely related concepts of the lemon. Also, there are other concepts that cannot be taken as its neighbors, such as black, rectangle, and hot. However, black is a color, so that it can be a neighborhood of yellow. Rectangle can be related to the concept of egg-shaped as a figure. Hot is a kind of taste like the concept of sour. Likewise, psychological space consists of complex and dynamic interrelationships among concepts.

These interrelationships can be theoretically understood as a process of categorization in human brains. Traditionally, categorization has been accepted as a basic and inevitable cognitive process to understand our world (Allport, 1954; Bruner, Goodnow, & Austin, 1960). According to Bruner and colleagues (1960), "to categorize is to render discriminably different things equivalent, to group the objects and events and people around us into classes, and to respond to them in terms of their class membership rather than their uniqueness" (p. 1). Categorization has two general principles: cognitive economy and perceived world structure (Rosch, 1978). The former is related to an efficient property of the cognitive process. That is, the first function of categorization is to "provide maximum information with the least cognitive effort" (Rosch, 1978, p. 28). The latter is associated with an organizing process of perceived information. This property provides that "the perceived world comes as structured information rather than arbitrary

or unpredictable attributes" (Rosch, 1978, p. 28). Suppose that we have never seen a lemon. Although the lemon is an unfamiliar object, we may easily gather information on the basis of previously constructed categories in our memory without any stressful pain. If we use several categories, such as color, shape, and taste, yellow, egg-shaped, and sour might be related concepts. On the contrary, black, rectangle, and hot might be thought of as unrelated concepts. The related concepts would be linked to the concept lemon in our cognitive space. As a result, these attributes from each category consist of structured information as a new category toward the lemon. Also, if we think of the lemon as a kind of orange that is a member of the fruit category, the lemon category can be included in a global category, fruit. Likewise, the process of categorization is based on the similarity or dissimilarity between concepts in our minds.

Cognitive Map

The Galileo space is a cognitive map in human brains. Traditionally, the cognitive map has been described as a spatial mental structure representing objects (concepts) and their associations constructed by the categorization process, and it helps to understand the complex world of human interactions (Downs & Stea, 1973; Kitchin, 1994; Tolman, 1948). In the field of neuroscience, the cognitive map has been accepted as a spatial network of neurons or brain cells formed by the memory process. O'Keefe and Nadel (1978) found the correspondence between neurons in the brain system and physical locations in the natural environment through observing rats' behaviors in complex mazes. Also, the researchers suggested that the hippocampus as a part of the forebrain associated with memory processes maintains a cognitive mapping system that places cells or neurons on the basis of data about distance and directions between physical locations in a spatial environment (O'Keefe & Nadel, 1978). This finding provides support for

the belief that the cognitive map as a geographical map can be represented in three-dimensional space with Euclidean properties (Kitchin, 1994).

However, Kuipers (1983) argued that the cognitive map has non-Euclidean properties because it considers large-scale spatial relationships that cannot be represented by a rigid geometrical map. Also, Barnett and Woelfel (1979) discovered the violation of "triangle inequality relationships" as "one of the Euclidean properties" by examining the cognitive process of cultural products. For example, consider the three concepts, lemon, orange, and yellow. Suppose that the cognitive distance between lemon and orange is 5 units, and the distance between lemon and yellow is 3 units. In this case, according to the triangle inequality, the distance between orange and yellow should be less than 8 units. However, in our minds, it is possible that the distance is greater than 8 units. At this point, cognitive space seems not to be described as a simple cartographic map based on the simple locations of neurons as the internal representation of environments. Tversky (1981, 1991, 1993) has supported this argument that the cognitive map cannot be figured as a geographical map. However, although there are geometric distortions in cognitive space, the function of the cognitive map as a spatial mental structure, creating a categorized map to understand the complex environment, cannot be denied (Kitchin, 1994; Kitchin & Freundschuh, 2000; Tversky, 1993). Recently, neuroscientists studying the cognitive map have focused on nonlinearly functional relationships between neurons rather than their physical locations in the brain system (e.g., Battaglia, Sutherland, & McNaughton, 2004; Kumaran & Maguire, 2005; Le Van Quyen et al., 2008).

Although the Galileo space as a cognitive map basically mimics the biological network of neurons in human brains (Woelfel & Fink, 1980; Woelfel & Stoyanoff, 2007), the Galileo model focuses on their functional relationships rather than their locations in the brain. The Galileo

model is founded on a belief that the functional associations of neurons responding to environmental stimuli can be represented as an artificial neural network on the basis of cognitive distances among them (Woelfel & Fink, 1980; Woelfel & Murero, 2004). That is, within the multidimensional cognitive space of the Galileo model, associated concepts that are similar or closely related are near each other, while other concepts that are different or relatively unrelated are further apart. Also, the strength of the relationships between concepts can be determined by the cognitive distances between every possible pair of concepts.

Self-concept

In the Galileo model, the self is a very special concept. The self is regarded as a conscious representation of a person (Woelfel & Fink, 1980; Woelfel & Stoyanoff, 2007). The self-concept is theoretically based on a social-psychological perspective, symbolic interactionism. According to Mead (1934), the self comes out of the mind as "arising and developing within the social process, within the empirical matrix of social interactions" (p. 133). The mind is the result of a communication process that designates meanings and evaluations of objects by using symbols constructed socially and culturally. The mind is constantly growing and changing through symbolic interactions. People can regard themselves as distinct objects in the mind, and they can apply the shared meanings to themselves that they designate to other objects. Thus, the self can emerge as a set of symbols reflecting people themselves. Mead (1934) noted that the substance of the self is reflexivity. Consequently, the self-concept can be defined as a set of meanings and evaluations that a person reflects on himself or herself, based on social interactions with other objects. Also, Rosenberg (1979) suggested a global definition of the self-concept as a person's set of thoughts and feelings about his or her social existence. The self-concept reflects an individual's synthesized evaluations about himself or herself in social or cultural contexts.

Concerning the broad conceptualization of attitude, the self-concept can be considered a global attitude toward oneself.

Recently, Vogeley and colleagues (2001) provided specific evidence of distinct neural processing associated with the self in human brains. The researchers found differentiated neural activations in self-related cognitive processes from the processing of information about others (Vogeley et al., 2001). Although various neural localizations of self, such as the right frontal cortex (Platek, Myers, Critton, & Gallup, 2003), the right lateral cortex (Lou et al., 2004), or the medial frontal cortex (David et al., 2006), have been revealed, there is evidence that the representation of self exists as distinct information processing in human brains (Gillihan & Farah, 2005).

In the Galileo space, the self-concept can be identified by its associations with other concepts. That is, people's selves are close to consistent concepts that define people's selves, and far from inconsistent concepts that do not describe people's selves (Barnett & McPhail, 1980; Woelfel & Fink, 1980). Therefore, in the Galileo model, an attitude toward a concept can be defined as the distance between the self-concept and the designated concept (Woelfel & Fink, 1980). If a behavioral concept such as donation is relatively close to people's selves, the behavior would be more frequently performed than other concepts that are far from people's selves. Conversely, if the distance between people's selves and donation is relatively farther apart, people would be more reluctant to perform the behavior than a behavior that is close to people's selves.

Direct-magnitude Scaling

The Galileo space, which is the spatial coordinate system for the model, is constructed by direct paired-comparison magnitude estimation (Barnett & Woelfel, 1988; Dinauer & Fink, 2005;

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Woelfel & Fink, 1980). Direct-magnitude scaling is a precise measurement system. It is

consistent with the properties of the real number system, which is the basis for most

mathematical operations. The real number system has five properties: 1) the numbers are ordered,

2) the differences between the numbers are equal, 3) the system has an absolute zero point, 4) the

system is unbounded, and 5) the system is infinitely dense (Barnett, Hamlin, & Danowski, 1981).

Many statistical techniques require these properties. Unless there is an absolute zero point, the

ratio is meaningless. Likewise, mathematical operations can be more fully applied to collected

data with the properties of the real number system.

Barnett, Hamlin, and Danowski (1981) indicated the problem of Likert-type scales, which

are usually used to measure attitudes. Likert-type items have only two properties of the real

number system: order and equal interval. These scales do not have an absolute zero point, they

are severely bounded, and they are not dense. These qualities severely restrict measurement

precision. The scales basically have 14% to 20% measurement error because they discriminate

only five to seven different values. Also, the scales tend to produce ceiling effects because they

limit the possible variation in measurement process. Thus, Likert-type scales can cause serious

problems in measurement reliability and validity. On the contrary, in the Galileo model, the

direct magnitude estimates on the basis of the real number system have great advantages in

reliability and validity (Barnett et al., 1981). The estimates allow maximization of the potential

variation because they are unbounded, that is, there are no ceiling effects. The estimates do not

build measurement error like Likert-type scales. Also, the estimates are capable of greater

control over the measured data, to which the mathematical operations can be fully applied.

Galileo's scaling has been tested for reliability and theoretical validity. Gillham and

Woelfel (1977) noted that the Galileo procedures produce a stable and precise measurement

system, reporting high levels of reliability (above .90) in repeated tests. Barnett (1972) indicated that high reliable coefficients would be facilitated by the homogeneity of the population and the selected concepts. He suggested that acceptable levels of reliability in a nationwide study could be obtained with more than 100 respondents, whereas a small sample from a well-defined population could achieve a high level of reliability. Barnett, Serota, and Taylor (1976) provided clear evidence for the validity of Galileo's scaling by longitudinally examining political attitude changes. Recently, various studies have demonstrated the reliability and validity of the Galileo measurement (Colfer, Woelfel, Wadley, & Harwell, 2001; Dinauer & Fink, 2005; Vishwanath & Chen, 2006; Woelfel & Murero, 2004).

Chapter III. Persuasive Message Strategy for International Development Campaigns

Purpose

This chapter aims to explore a persuasive message strategy for international development campaigns. Unlike traditional message-framing research, this study concentrates on the message content itself. Chapter I theoretically indicated several limitations of the traditional campaign strategy using a negative message frame, such as ambiguous effects and donor bias. In this chapter, an alternative message strategy to overcome the limitations will be suggested by considering the interattitude structure of target audiences in IDCs through the Galileo spatial-linkage model.

For this research objective, this study first diagnoses the message content of current IDCs to identify the major issues and concepts that the campaign messages contain. Campaign practitioners usually construct their campaign messages with several underlying concepts or issues that represent their campaign objectives. Also, campaign practitioners might expect that the core concepts directly emphasize the need for target people to engage in the projects. Thus, identifying the main concepts would facilitate the understanding of the nature of the message content in current IDCs.

This study also considers target audiences' attitudes toward current IDCs because the effectiveness of campaign messages can be understood through target audiences' attitudes toward the message content. If people understand the main concepts in the campaign as issues that are important to them, the campaign might achieve its goals. Conversely, if people regard the main concepts as issues that do not concern them, the campaign might fail to persuade the target audience. Based on the target audiences' attitudes, this study investigates the substantial

limitations of message content design in current IDCs and explores a persuasive message strategy for IDCs using the Galileo model.

Method

Current IDCs

To identify the main concepts of current IDCs, several international nongovernment organizations[1] (INGOs) associated with the United Nations' Millennium Campaign were examined. The Millennium Campaign is a representative IDC. It was launched in October 2002, after the United Nations adopted the Millennium Declaration that bound 189 government leaders to join forces in the fight against global poverty in September 2000. The declaration includes broad issues related to international development, such as reducing extreme poverty, promoting primary education, preventing the spread of HIV/AIDS, and developing global partnerships. Since the campaign was launched, the selected 59 developmental INGOs have been supporting the Millennium Campaign and have been dealing with specific issues related to each organization. For this reason, in this study, the mission statements of the 59 developmental INGOs were used to determine the core concepts in the international development domain.

Semantic Network Analysis

Semantic network analysis is a systematic technique of content analysis to identify the meaning structure of symbols or concepts in a set of documents, including communication message content by using network analysis (Monge & Contractor, 2003; Monge & Eisenberg, 1987). Although semantic network analysis is based on network analysis, unlike traditional network analysis, this analysis explores implicitly shared meanings of symbols or concepts in texts rather than explicitly perceived communication structure among actors (Doerfel & Barnett, 1999; Doerfel & Marsh, 2003). The semantic network represents the associations of neurons

responding to symbols or concepts that are socially constructed in human brains. That is, it is a relationship of shared understanding of cultural products among members in a social system (Monge & Contractor, 2003). In this study, the semantic network analysis of the mission statements of developmental INGOs was conducted using CATPAC (Woelfel, 1993, 1998), which is part of the Galileo modeling program. It embodies semantic network analysis in "a self-organizing artificial neural network optimized for reading text" (Woelfel, 1998, p. 11). The program identifies the most frequently occurring words in a set of texts and explores the pattern of interconnections based on their co-occurrence in a neural network (Doerfel & Barnett, 1999; Woelfel, 1998). Many studies have used the program to analyze diverse types of texts, such as news articles, journals, web content, and conference papers (e.g., Choi, Lehto, & Morrison, 2007; Doerfel & Barnett, 1999; Doerfel & Marsh, 2003; Kim, Su, & Hong, 2007; Rosen, Woelfel, Krikorian, & Barnett, 2003).

In CATPAC, a scanning window reads through fully computerized texts. The window size represents the limited memory capacity associated with reading texts. Although the size can be adjusted, in this study, the scanning window covers seven words at a time on the basis of Miller's (1956) argument that people's working memory can hold seven meaningful units at a time. After first reading words 1 through 7, the window slides one word further and reads words 2 through 8 and so on. Whenever given words are presented in the window, artificial neurons representing each word are activated in a simulated neural network (Woelfel, 1993, 1998). Also, the strength of their connections is determined by the degree of their co-occurrence (Woelfel, 1993, 1998). That is, the connection between neurons is strengthened when the number of times that they are simultaneously active increases. Conversely, their connections are weakened as the likelihood of their co-occurrence decreases.

After the scanning window passes through a given set of texts, CATPAC creates a matrix based on the probability of the co-occurrence between neurons representing words or symbols. From the matrix, CATPAC identifies the pattern of their interrelationships by using cluster analysis. In this study, the cluster analysis uses the Ward method[2] (see Ward, 1963, for more details) to optimize the minimum variance within clusters. This method provides a grouping of words that have the greatest similarity in the co-occurrence matrix, where each cell shows the likelihood that the occurrence of a word will indicate the occurrence of another. Through the cluster analysis, CATPAC produces a "dendogram," a graphical representation of the resultant clusters within the analyzed texts (Woelfel, 1993, 1998). The cluster analysis provides content categories based on the empirical interrelationships among words in the text. CATPAC, unlike the traditional content analysis (see Krippendorf, 1980), can read and understand the given texts without any theoretical bias.

With the cluster analysis, the multidimensional scaling (MDS) technique facilitates the understanding of the interrelationships among words and clusters in the semantic neural network. The co-occurrence matrix can be transformed into a coordinate matrix for spatial representation through the MDS algorithm (see Torgerson, 1958). The position of each word in a multidimensional space is determined by the similarities between words, based on the likelihood of their co-occurrence. That is, words having strong connections would be close to each other. On the contrary, words having weak relationships would be far apart. Thus, through the MDS, the pattern of the semantic network in a given set of texts can be visually identified. For the MDS analysis, this study used UCINET-VI (Borgatti, Everett, & Freeman, 2002), a program designed to analyze network data.

CATPAC Analysis Procedure

The mission statements of the 59 INGOs were gathered from their official websites in a text file and were separated from each other by inserting the CATPAC delimiter "-1" on the next line following each mission statement. The delimiter allows the program to regard whole texts in a mission statement as unique cases (Doerfel & Barnett, 1999; Woelfel, 1993). As a result, the main concepts and the pattern of their interrelationships can be examined in the contexts of the entire cases. In the analysis, the program excludes a list of meaningless words, including articles, prepositions, conjunctions, and transitive verbs. Also, any problematic words that may distort the analysis can be eliminated by the researcher. Table 1 shows the excluded words in this study. In addition, similar words were combined into single words to facilitate the analysis. The combined words for this study are listed in Table 2.

To determine the most frequently occurring words that this study would consider, a prior analysis was conducted focusing on 100 frequently occurring words. The results are presented in Table 3. From the results, this study focused on 35 words that occurred over 1% of the total frequency because the study aims to explore the main concepts in current IDCs. The cluster analysis and MDS techniques for the semantic analysis of current IDCs were performed with the 35 most frequently used words.

Target Audiences

This study also examined the target audiences' attitudes toward IDCs' message content. Specifically, the study used a convenience sample of college students as a segment of the campaign targets. Although students do not represent all target audiences of IDCs, college students occupy a critical segment of the population. Also, college students have been regarded as ideal targets for prosocial campaigns because the students are not only relatively open to new

information but also will grow into actual donors in the future (Feeley, 2007). Current IDCs, such as the United Nations' Millennium Campaign, may consider young people actual targets because of the students' potential higher socioeconomic status and opinion leadership.

The study conducted a public opinion survey approved by the Social and Behavioral Sciences Institutional Review Board at the University at Buffalo, of the State University of New York. Initially, participants in the study were 281 undergraduate students enrolled in an introductory communication course at the University at Buffalo in the 2007 spring semester. Considering respondents' cultural orientations and data consistency, 34 international students and 29 incomplete responses were eliminated from the initial data. The final data were based on 218 participants, including 113 women and 105 men. The participants' mean age was 20.06 (*SD* = 1.94).

Galileo Survey

To construct the Galileo survey instrument, a preliminary survey with 54 students enrolled in sophomore- and junior-level communication courses was conducted. An open-ended question asked about the major issues or problems in the world. The question allowed multiple responses. After reviewing all responses, several categories were determined by the researcher. A content analysis was conducted by two graduate student coders. The intercoder reliability was measured by a Scott's pi of .89, which is acceptable.

The most salient world issue was war (and conflict), indicated by 92.6% of respondents. The second major issue was poverty (75.9%). Other issues were the environment (25.9%), health (22.2%), human rights (16.7%), power inequality (16.7%), social safety (11.1%), education (9.3%), and government (9.3%). Additionally, the eight Millennium Development Goals (UN, 2005), which provide the fundamental aims of IDCs, were considered. The eight goals are to

eradicate extreme poverty and hunger, to achieve universal primary education, to promote gender equality and empower women, to reduce child mortality, to improve maternal health, to combat HIV/AIDS, malaria, and other diseases, to ensure environmental sustainability, and to develop a global partnership for development (UN, 2005).

On the basis of the preliminary surveys, 11 concepts were selected: 1) poverty, 2) education, 3) health, 4) human rights, 5) human resources, 6) natural resources, 7) social safety, 8) government leadership, 9) global cooperation, 10) global conflict, and 11) international aid. In addition, the concept of self was added to measure attitudes toward each concept. From the 12 concepts including self, a complete list of 66 paired comparisons[3] was included in a survey questionnaire (see Appendix A). Respondents were asked to make direct magnitude judgments of the differences between paired concepts using the following form: If COOPERATION and CONFLICT are 100 units apart, how different or how far apart is each word or phrase from the other in the pair? POVERTY and EDUCATION are _____ units apart. This criterion pair was given before the questions. The criterion pair helps the respondents to judge the differences between concepts scaled as a standard distance. Respondents were instructed to report a real number less than 100, if they recognized the differences between any paired concepts to be less different than the standard distance. Conversely, if respondents perceived the concepts to be more different, a larger number above 100 was reported without an upper limit. If the paired concepts were perceived to be the same, zero was entered. Additionally, if respondents did not know the differences, blank answers were allowed. Lastly, questions about demographics, such as sex, age, and citizenship, were included.

Galileo Analysis Procedures

The Galileo analysis produces a mean distance matrix and a spatial coordinate matrix. The mean distance matrix presents the dissimilarities of all possible concept pairs. The mean distance of each concept pair represents the shared collective meanings of the concept pair and is determined on the basis of fundamental measurement assumptions that the sample mean from a group of observations will converge on the true population mean as the sample grows large (Barnett et al., 1976; Serota, Cody, Barnett, & Taylor, 1977). The mean distance matrix is transformed into a scalar product matrix between the concept positions that refer to an origin at the centroid of all concept locations (Torgerson, 1958). This matrix is orthogonally decomposed to achieve a coordinate matrix whose columns are orthogonal axes of the space and whose rows are the projections of the concept position on the axes (Torgerson, 1958). Since the coordinate matrix is based on unstandardized distance vectors between all possible concept pairs, all variance in the sample population is completely explained by the multidimensional space (Barnett et al., 1976; Serota et al., 1977). Additionally, the three largest dimensions from the coordinate matrix are visualized in the three-dimensional map. Although configurations in the three-dimensional space cannot completely represent all associations between concepts, the three dimensions would simultaneously facilitate the understanding of the dissimilarities (Woelfel & Fink, 1980).

Finally, a message-optimizing procedure, which is part of the Galileo analysis, was conducted to explore a persuasive message design for IDCs. The explanation of the procedure is as follows: Messages act as forces that alter the position of concepts in the attitude space. When two words or phrases are associated in the same message, they approach each other in the space (Saltiel & Woelfel, 1975; Woelfel & Saltiel, 1988). When a number of concepts are associated in

the same message, all concepts in the message approach the common center of the concepts in the message. Since the distances among the points in the space represent the relationships among the concepts in the minds of those who completed the Galileo survey, these movements represent changes in attitudes. Thus, when we try to move international aid closer to the self-concept, we are in effect trying to bring this concept closer to the kind of issue that the average respondent would identify with and support with his or her behavior. The procedure produced a large number of two-pair, three-pair, and four-pair message solutions. The message effects of the possible solutions are inspected by considering the angles between an expected moved location of international aid and the target vector in the space (Serota et al., 1977; Woelfel & Fink, 1980). Consequently, the best message strategy, which has a minimal angle between the concept vectors, will be suggested (Serota et al., 1977).

Results

Semantic Network Analysis

To clarify the major issues of the 59 INGOs, this study focused on the 35 most frequently occurring words over 1% of the total frequency in the mission statements. Based on the results of the CATPAC analysis (see Table 3), the most frequently occurring word was world, which occurred 134 times in 44 (74.6%) organizations. The second most frequently mentioned word was people, which appeared 116 times (40, 67.8%). Other frequently occurring words were child, 93 times (19, 32.2%); poverty, 82 times (31, 52.5%); work, 80 times (40, 67.8%); community, 72 times (34, 57.6%); life, 63 times (34, 57.6%); development, 62 times (27, 45.8%); organization, 61 times (40, 67.8%); and help, 59 times (27, 45.8%). These words represent the commonly used words in the mission statements of the 59 developmental INGOs.

Based on the co-occurrence matrix (see Appendix B) representing the semantic network focusing on the 35 most frequently occurring words, a cluster analysis, which is part of the CATPAC analysis, was conducted to further examine the underlying concepts. From the cluster analysis, the groupings of words that have a tendency to co-occur in the mission statements were identified. Figure 1 shows the co-occurring clusters. There were two major grouping of words. The first larger cluster included 28 words. The major members of the cluster were Africa, country, global, life, poverty, need, AIDS, education, provide, and health. The average number of mission statements that have this grouping of words was 22 (37.3%). The second cluster contained seven words. The most tightly connected words in the cluster were help, world, and people. About 28 (47.5%) of the 59 INGOs used these words in their mission statements.

In addition, MDS was conducted to investigate the interrelationships between words and the clusters. From the coordinate matrix (see Appendix C) of the semantic network, Figure 2 graphically displays the configurations in the two-dimensional space. It accounted for 79.9% of the variance in the network. The 10 major words in the larger cluster, poverty, Africa, country, global, life, need, AIDS, education, provide, and health, were strongly connected to each other and were located in the center of the cluster. Poverty was the most frequently used word in the 10 main members. In the other cluster, world and help were tightly associated with each other. Also, they were strongly connected to the 10 major words in the larger cluster. From the associations of the words, it could be inferred that the developmental INGOs aim to help the world mainly concerning poverty, education, and health issues.

Galileo Analysis

After removing outliers[4] from the data set, the number of concept pairs judged from 218 respondents was 14,176. The average judgment was 52.07 units. The range was from 0 to 330.

Table 4 presents the mean distances between the concepts. The range of the sample size in each concept pair was from 210 to 218. Overall, the closest concept pair was self and education, which were 23.2 units apart ($SE = 2.44$). This is an indicator of face validity. Because the participants are all students, the most consistent concept that defines them involves education. In terms of self, health ($M = 30.92$; $SE = 3.01$) and human rights ($M = 31.92$; $SE = 2.50$) were closer than other concepts. Conversely, the furthest concept pair was self and poverty, 98.21 units apart ($SE = 4.32$). International aid ($M = 72.67$; $SE = 3.72$) and global conflicts ($M = 69.55$; $SE = 3.83$) were further from the self-concept than other concepts.

To determine the differences of the mean distances between concept pairs, F tests were performed.[5] First, in terms of self, the mean distances of 11 concept pairs were tested. The results revealed that the distances between self and the other concepts were significantly different[6], $F(10, 2349) = 45.012$; $p < .05$. Follow-up Tukey's HSD tests indicated that international aid was significantly further from self than a grouping of concepts, including education, health, and human rights. This indicated that international aid is an issue that the respondents are not concerned about.

Additionally, in terms of international aid, the mean distances of 10 concept pairs, except self, were examined. The differences in the mean distances between international aid and the concepts were nonsignificant, $F(9, 2136) = 1.94$; $p > .05$. The range of the mean distances was from 44.28 to 58.0 units. However, the mean distance of the closest concept pair, self and education, was significantly different from a grouping of the mean distances between international aid and the other 10 concepts, $F(10, 2352) = 8.53$; $p < .01$. This reveals that international aid is not connected to the concepts that are relatively close to the self-concept. Also, there are no other concepts closely related to international aid.

Table 5 presents the spatial coordinate matrix for this study. Nine of the dimensions, which have positive eigenvalues, were represented in real space; however, three dimensions, which have negative eigenvalues, were embodied in imaginary space, that is, non-Euclidean space. Real variance can be explained only by real spatial configurations. Based on the matrix, the first dimension accounted for 36.02% of the real variance, and two-dimensional space accumulatively explained 52.05%. The third dimension provided 14.92% more information than two-dimensional space. Figure 3 represents the visualized configurations in the three-dimensional space accounting for 66.97% of the real variance.

The results of the message-optimizing procedure (see Appendix D) recommended that the best message strategy using the concepts relatively close to the self-concept, such as education, health, and human rights, would facilitate the movement of international aid toward self. If the full effects of the message strategy were obtained, the concept of international aid would move to a point 14.41 units away from the self-concept. Although the angle between the resultant vector and the self-concept could not be calculated because the concept relationships were imaginary, the Galileo space regarding the Riemann space expected that the change of the location of international aid would be closest to the self-concept. The percentage of improvement from the original position of international aid would be 80.18%.

Discussion

This chapter examined the message content of current IDCs using semantic network analysis. The results indicated that poverty, education, and health issues are the main focus of the 59 current IDCs. These issues can be regarded as the core concepts that promote their fundamental mission, help the world. Also, in this chapter, the interattitude structure of target audiences was considered through the Galileo analysis, and the results indicated that the concepts,

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international aid and poverty, were located relatively far from the self-concept in the Galileo space. That is, international aid and poverty seems to be an inconsistent issue to the target audiences. Also, regarding associations between international aid and other concepts, international aid did not have a close relationship with the relatively consistent issues (education, health, and human rights) or the relatively inconsistent issues (poverty and global conflicts) to the audiences.

Limitation of Current IDCs

These results reveal a substantial limitation of the current IDCs. Although they deal with poverty, education, and health as core concepts of their campaigns, the target audiences perceived those concepts differently. The concept of poverty was the furthest from their selves in the Galileo space. On the contrary, education and health were relatively close. That is, the IDCs' target audiences do not regard poverty as a relevant issue even though they think of education and health as consistent issues. Also, none of these concepts were considered to have a close association with international aid. These interrelationships among the concepts might affect the location of international aid in the conceptual space. Through the Galileo message-optimizing procedure, the predicted effects of the message strategy using the three main concepts were obtained, and international aid would move to a point 50.3 units away from the self-concept. The angle between the resultant vector and the target (self) is 41.3 degrees. The percentage of the maximum improvement is 30.78%. The expected full message effect would be relatively weak. At this point, the strategic limitation of the current IDCs could be raised.

Galileo Message Strategy

The message-optimizing procedure of the Galileo analysis for this study suggested that the relatively close issues, education, health, and human rights, would facilitate attitude change

for international aid promotion. Serota, Cody, Barnett, and Taylor (1977) mathematically explained the message-optimizing procedure. The creation of Cartesian coordinates through multidimensional scaling makes it possible to develop communication strategies that when implemented will reposition the concepts in the coordinate space as desired. Basically, the theory behind the procedure is as follows: a vector analysis is performed by considering all the concepts' positions. A target vector is drawn between the concept whose position one wishes to change and its desired location. In this case, we want to reposition international aid closer to the self-concept. Then, resultant vectors are determined based upon the other concept's locations. Figure 4 illustrates the principle of the message strategy for this study. That is, the resultant vector of international aid through the associations with the relatively close concepts forms the smallest angle with the target vector (self). Also, the position of international aid moves along the expected vector and becomes closest to the self-concept. The amount of attitude change is determined by the length of the resultant vector.

The Galileo message strategy for IDCs emphasized the close relationships between international aid and its attribute concepts (education, health, and human rights) rather than the direct relationship between international aid and the target audiences themselves. That is, the message is designed to indirectly affect the targets' attitudes toward international aid by changing their interattitude structure related to the focal concept (international aid). Dinauer and Fink (2005) provided a physical analogy for this Galileo message strategy:

> Consider the Newtonian demonstrator, a device in which five steel balls, each at the end of a thin line of rigid wire, hang in a linear series. If the first ball in the series is pulled back and then released, it swings back to the series and hits the next ball (ball #2). Ball #2

does not move, however. The force from ball #1 moves through balls #2-4, and causes

ball #5, at the other end of the series, to move. (p. 2)

In this study, ball #1 can be regarded as the Galileo message enhancing the associations

between international aid and its attributes. Also, ball #2 can be attitudes toward the attributes.

Although the force of the message (ball #1) does not change their attitudes (ball #2), it causes the

attitude toward international aid (ball #5) to change. That is, although the persuasive message

does not directly affect the target audience's attitudes, it can indirectly facilitate the attitude

change by forcing the associations among related concepts to be close to the focal concept.

Conclusion

In sum, this chapter mainly focused on how to construct quality message content to

promote IDCs by considering their target audiences' attitudes through the Galileo analysis. The

messages of current IDCs have a substantial limitation to persuade people, in that the concept of

poverty is an irrelevant issue to the target audiences in the Galileo space. Also, the expected

message effects of the current IDCs are relatively weak. At this point, through the Galileo

analysis, a persuasive message strategy was suggested to overcome the limitation of current

IDCs. That is, compound messages emphasizing the close relationships between international aid

and the relevant concepts (education, health, and human rights), which are consistent issues to

the targets, would support target audiences' attitude change to participate in IDCs.

Notes to Chapter III

[1]   The 59 developmental NGOs are The ONE Campaign, Bread for the World Institute, CARE USA, DATA (Debt, AIDS, Trade, and Africa), International Medical Corps, International Rescue Committee, Mercy Corps, Oxfam America, Plan USA, Save the Children, World Concern, World Vision, A Glimmer of Hope, Action Against Hunger, American Baptist Churches, American Jewish World Service, Americans for Informed Democracy, AERDO (Association of Evangelical Relief and Development organization), Blood: Water Mission, The Child Health Site, Christian Children's Fund, Christian Reformed World Relief Committee, Church World Service, Citizens for Global Solutions, Concern Worldwide USA, CrossRoads, Emergent Village, Engineers Without Borders USA, The Episcopal Church, Episcopal Relief and Development, FORGE, Global Health Council, Grameen Foundation USA, Habitat For Humanity, Heartland Alliance, Heifer, The Hunger Project, The Hunger Site, InterAction, Jubilee USA, Keep A Child Alive, Living Water International, Millennium Campaign, National Association of Social Workers, Nazarene Compassionate Ministries, Net Aid, Operation Blessing International, Opportunity International, Our Voice Together, RESULTS Educational Fund, Save Africa's Children, Sojourners, The United Nations Association USA, The United Methodist Church, US Fund for UNICEF, The United Nations Foundation, World Hope International, World Hunger Year, and World Relief.

[2]   The Ward's method is a hierarchic clustering technique. It begins with one large cluster including all concepts or words, and progressively splits them into separated clusters until minimizing the sum of the squared distances of each word from the mean of its cluster. Also, the method attempts to optimize the minimum variance within clusters.

[3]   The number of pair comparisons is based on the following formula: $n(n-1)/2$ (n = the number of concepts).

[4]   The reported magnitude judgments in excess of 399 were removed as outlier entries from the data.

[5]   The statistical tests are a temporary expedient to provide better understanding of the differences of the mean distances. The statistical results do not have any inferential implications except the dissimilarities between the distances.

[6]   The results of Levene's test indicated that the assumption of the homogeneity of variance was violated in this data, $F(10, 2349) = 9.78$; $p < .01$. However, F test is generally considered a robust test. Also, in this study, the sample size of each concept pair was almost same. Thus, the results of F test for this study could be statistically meaningful.

Chapter IV. Message Effectiveness and Theoretical Validity

Purpose

This chapter is undertaken to examine the effectiveness of the compound messages suggested through the Galileo message strategy in Chapter III. The suggested message strategy for international development campaigns (IDCs) emphasizes the close relationships between international aid and the neighboring concepts of target audiences' selves, such as education, health, and human rights, which can be regarded as consistent issues to the targets. The Galileo message strategy is theoretically based on the dynamic changes of a global interattitude structure that depends on information learning processes. The messages define the interrelationships among the four concepts as a close neighborhood in the memory system and predictably move the location of international aid to be close to the targets' selves. According to the results of Chapter III, if the full effects of the message strategy were obtained, the distance between international aid and the self-concept would be as close as 14.41 units apart. Thus, the effects of the messages can be empirically examined by observing the changed location of international aid in the Galileo space. The message strategy assumes that as a focal concept (international aid) is closely interrelated with its expected attributes (education, health, and human rights), the concept becomes closer to its target concept (self). That is, the distances between international aid and its manipulated attributes positively affect its distance from the self-concept in the Galileo space.

This chapter also examines the validity of the Galileo model. The model validity can be determined by whether the model can predict future behavior. As previously discussed in Chapter II, the Galileo model assumes that attitudes defined as the concepts' position in the Galileo space determine the performance of behaviors associated with the concepts. Regarding this theoretical assumption, this chapter examines the relationship between target audiences'

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attitudes measured through the Galileo analysis and behavioral intentions toward international aid. Also, in this chapter, the theory of reasoned action (TRA) (Ajzen & Fishbein, 1980) is employed as a comparative model. TRA has been considered a representative model to predict various social behaviors (Hale, Householder, & Greene, 2003; K. Miller, 2005). TRA has three main components: attitude, subjective norm, and behavioral intention (Ajzen & Fishbein, 1980). TRA's theoretical assumption is that behavioral intention depends on attitude and subjective norm. Figure 5 shows the theoretical relationships among the components. The attitude of TRA is measured by directly evaluating beliefs about a specific behavior. There is no consideration of other attitude objects that can be associated with the behavior. That is, the interattitude structure might be ignored in this model. For this reason, this chapter considers TRA a comparable model. For the comparison, by adding the Galileo attitude to the model as the same level with the TRA attitude, a hypothesized research model can be suggested in Figure 6.

Method

Participants

For this study, undergraduate students enrolled in introductory communication courses at the State University of New York at Buffalo in the 2008 spring semester were invited to participate in an online survey approved by the Social and Behavioral Sciences Institutional Review Board at the University at Buffalo. Student participation was completely voluntary. Participants received 1 hour of research credit toward a research requirement for the courses. After excluding international students and incomplete responses, the final data were based on the responses of 218 participants, including 123 women and 95 men. The participants' mean age was 20.31 (*SD* = 2.67).

Research Design

This study employed a between-subject design. All participants were randomly assigned to one of three conditions, including a control group and two treatment groups. The control group was not provided any message stimulus. The two treatment groups were asked to carefully read a manipulated message following the Galileo message strategy. Then, they took a simple memory test to increase their attention paid to the message. Regarding the effects of message repetition, one of the treatment groups was provided a summary in bold of the message previously read in the survey direction. Cacioppo and Petty (1985) suggested that message repetition would enhance the persuasive effects of messages by increasing recipients' ability to receive the message in the cognitive process. That is, increased message exposure might lead to increased persuasion. In the Galileo model, the quantity of messages has been considered a crucial factor for attitude change (Barnett et al., 1976; Woelfel & Fink, 1980). This research design allowed for a comparison of the mean distances between the concept pairs in each condition.

Message manipulation. A campaign message (see Appendix E) emphasizing the relevance between international aid and the consistent concepts to the target audiences, education, health, and human rights was manipulated as a short paragraph. To verify that participants perceived the message as intended, a manipulation check was independently performed before the main survey. A simple open-ended question asked 28 undergraduate students enrolled in a junior-level communication course, after reading the message, to list the main concepts that are associated with international aid. The responses that included all concepts (education, health, and human rights) were coded as 1 and the others as 0. The number of respondents who listed all main concepts was 23 (92%), and the number of respondents who listed others was 5 (8%). The

results of the chi-square test supported the message manipulation ($\chi^2 = 11.571$, $df = 1$, $p < .01$ with a null hypothesis of 50% expected).

Survey instrument. Online survey questionnaires (see Appendixes F and G) were used for this study. They included a complete list of 66 pair comparisons based on 12 previously selected concepts: 1) poverty, 2) education, 3) health, 4) human rights, 5) human resources, 6) natural resources, 7) social safety, 8) government leadership, 9) global cooperation, 10) global conflict, 11) international aid, and 12) self. The order of the questions was randomized to prevent possible response pattern effects. The criterion pair was the same one that was employed in Chapter III as follows: if COOPERATION and CONFLICT are 100 units apart. In the survey directions, respondents were instructed to judge the differences between the scaled concepts, based on the standard distance of the criterion pair. Respondents were asked to report their judgments of the differences in the concept pairs by using direct-magnitude scaling in the same way as in Chapter III.

After completing the 66 pair comparisons, respondents were asked nine additional questions to measure the components of TRA, including attitude, subjective norm, and behavioral intention toward international aid. In terms of attitude, there were three items as follows: joining in an international aid program is beneficial (A1), good (A2), and valuable (A3). The items for subjective norm were as follows: Most people who are important to me think that I should participate in an international aid program (SN1), most people who are important to me join in an international aid program (SN2), and many people like me join in an international aid program (SN3). Concerning behavioral intention, the following items were presented: I intend to participate in an international aid program (IN1); at some time in the future, I plan to join in an international aid program (IN2); and I have considered the possibility of becoming a donor of

international aid (IN3). These items were measured using unlimited real numbers rather than Likert-type scales. On the scale, the respondents were instructed as follows:

A score of 0 indicates that you do not agree with the statement. A score of 100 indicates an *average* level of agreement. In addition, a score of 200 indicates twice the average level of agreement, and a score of 50 means half as much agreement. There is no limit to the size of the number you may enter. If you don't know an answer, just leave it blank.

Lastly, questions about demographics, such as sex, age, and citizenship, were included.

Procedures

The surveys were conducted online. According to three different conditions, three types of online survey addresses were randomly assigned to participants. The students accessed one of the sites via a website programmed for random assignment. An information consent form was provided at the beginning of the surveys. After completing the consent form, students could participate in the study. The online surveys were conducted from March 19 to March 24, 2008.

Analysis Strategy

To facilitate understanding of the differences, the spatial configurations in each group were examined in the three-dimensional space. For precise comparison of the spaces, the orientation of the space between groups was congruous to each other using a least-squares orthogonal rotation (see Barnett & Woelfel, 1988; Serota et al., 1977; Woelfel & Fink, 1980). In the treatment groups, the conceptual locations of manipulated concepts, such as international aid, education, health, and human rights, were different from their positions in the control group. Conversely, the locations of the remaining concepts excluded in the message strategy were stable. Through the rotation procedure, the stable configurations in the treatment groups were rotated to their corresponding concepts in the control group as closely as possible without changing any

conceptual distances in either space. Through this procedure, spurious and artifactual differences caused by the orientation of spaces could be eliminated (Woelfel & Fink, 1980; Woelfel, Newton, Holmes, Kincaid, & Lee, 1986). Consequently, the rotations of the spaces could provide a better understanding of the different locations of manipulated concepts in three-dimensional space.

To test the hypothesized model as shown in Figure 6, structural equation modeling (SEM) with maximum likelihood (ML) estimation using AMOS 7.0 was employed. Before testing the model, a confirmatory factor analysis (CFA) was conducted to determine whether the measured indicators reliably reflected their latent variables (attitude, subjective norm, and behavioral intention). Model fit was judged by a combination of four indices: chi-square (χ^2) goodness-of-fit, comparative fit index (CFI), nonnormed fit index (NNFI), and root mean square error of approximation (RMSEA). For a good model fit, chi-square values should be statistically nonsignificant. Concerning the sensitivity of large sample sizes in the chi-square estimates, the three other indices were also considered. CFI and NNFI values greater than .90 are desirable (Hu & Bentler, 1999), whereas RMSEA values less than .05 indicate a good model fit, values between .05 and .08 represent a reasonable model fit, and values greater than .10 can be regarded as a poor model fit (Browne & Cudeck, 1992).

<div align="center">Results</div>

Descriptive Information

The 218 final participants were randomly assigned to three groups for this study. The control group contained 65 participants (57% female and 43% male). Fifty-nine students (56% female and 44% male) were involved in the treatment group with the one-time message and 94 (56% female and 44% male) in the repeated message group. After removing outliers, the final data included 13,949 paired-comparison judgments with ranging from 0 to 390.

Tables 6, 7, and 8 present the mean distances between concepts in the control, one-time message, and two-time message groups. Regarding the control group, relatively close concept pairs were between health and self ($M = 33.41$; $SE = 5.48$) and between education and self ($M = 38.26$; $SE = 5.73$). Conversely, the pairs between international aid and self ($M = 104.94$; $SE = 9.44$) and between poverty and self ($M = 94.27$; $SE = 7.85$) were relatively farther than other concept pairs. In terms of international aid, the mean distances of the 10 concept pairs except the self-concept were from 56.72 to 77.26 units.

In the one-time message group, the concept pairs between education and self ($M = 33.07$; $SE = 5.32$) and between health and self ($M = 37.69$; $SE = 5.00$) were relatively closer to each other than the other concept pairs. The relatively farthest concept pairs were between poverty and self ($M = 113.47$; $SE = 10.22$) and between government leadership and self ($M = 93.29$; $SE = 9.19$). The mean distance between international aid and self was 76.93 units ($SE = 7.18$). The range of the mean distances from international aid to other concepts except self was from 49.36 to 72.90 units.

Lastly, regarding the two-time message group, the relative closest concept pairs were between health and self ($M = 31.23$; $SE = 4.15$), between education and self ($M = 34.65$; $SE = 4.96$), and between human rights and self ($M = 39.45$; $SE = 5.07$). On the contrary, the relative farthest pairs were between poverty and self ($M = 81.90$; $SE = 7.00$) and between international aid and self ($M = 80.70$; $SE = 7.03$). The range of the mean distances from international aid to other concepts except self was from 47.88 to 57.05 units.

Message Effectiveness

This study examined message effectiveness in the Galileo space. To do this, theoretically stable configurations in the treatment groups were rotated to their counterparts in the control

group using a least-squares orthogonal rotation. Tables 9, 10, and 11 present the rotated

coordinate matrixes for each group. Based on the spatial coordinates, Table 12 shows the

distances and correlations between the corresponding concepts in the pairs of the group spaces.

In terms of the one-time message group, the differences in the locations of the manipulated

concepts (education, health, human rights, and international aid) from the locations of their

counterparts in the control group were higher than the differences in others' positions in the

Galileo space. Specifically, from the individual counterparts of the manipulated concepts,

international aid was 63.91 units apart ($r = .19$); education, 49.06 ($r = .35$); human rights, 41.88

($r = .59$); and health, 30.30 ($r = .77$). Regarding the two-time message group, the conceptual

positions of the four manipulated concepts were also relatively far from the locations of the

corresponding concepts in the control group as follows: international aid, 49.97 ($r = .54$);

education, 45.71 ($r = .36$); human rights, 57.44 ($r = .19$); and health, 36.17 ($r = .66$).

As shown in Figure 7, the different concept locations among groups were graphically

displayed in three-dimensional spaces accounting for 59.23% of the real variance in the control

group, 62.94% in the one-time message group, and 59.50% in the two-time message group. The

locations of unattached concepts in the message strategy were relatively stable across the three

group spaces, whereas the locations of the manipulated concepts were relatively different.

Particularly, the locations of international aid in the treatment groups were closer to the self-

concept than the counterpart in the control group. Furthermore, based on the visualized x axis of

the Galileo space, its height in the two-time message group definitely decreased compared with

the one-time message group, even though the distances from the self-concept were similar.

Table 13 presents the differences of manipulated concept pair distances between the

control group and the treatment groups. All distances in the two treatment groups decreased

compared with those in the control group. Also, the distance between international aid and the self-concept significantly decreased over 24 units in the two treatment groups. Comparisons among the three groups were statistically investigated using the Kruskal-Wallis test. The results indicated a significant difference of the paired concept distances among the three groups, χ^2 (2, $N = 21) = 7.043, p < .05$. As a follow-up test, the Mann–Whitney U test was conducted to identify specific group differences. The results showed that the paired concept distances in the control group are significantly different from those in the one-time message group ($z = -.1.98, p < .05$, two-tailed) and the two-time message group ($z = -2.24, p < .05$, two-tailed). Conversely, the difference of the distances between the treatment groups was nonsignificant ($z = -1.34, p > .05$, two-tailed).

Model Test

The 153 respondents in the treatment groups were considered to test the hypothesized model (see Figure 6). Regarding the 10 observed variables, such as the Galileo attitude (the mean distance between international aid and the self-concept), three TRA attitude items, three subjective norm items, and three behavioral intention items, Box's M test confirmed the homogeneity of their covariance matrices across the two treatment groups, Box's M = 75.47, $F(55, 41710.14) = 1.26, p = .094$. Thus, combining both groups into a single structural model was tenable.

As the first step of the model test, confirmatory factor analysis (CFA) was performed for the measurement model (see Figure 8) that all latent variables were correlated to each other. Descriptive statistics, including means, standard deviations, and correlation coefficients for all observed variables included in the measurement model, are reported in Table 14. The CFA model demonstrated an acceptable fit, $\chi^2(24, N = 153) = 56.19, p < .01$, CFI = .964, NNFI = .932,

and RMSEA = .094 (90% confidence interval [CI]: .062 - .126). Table 15 shows the results, including the factor loadings of the observed variables and Cronbach's alpha scores for the internal consistency of items on each latent construct. All factor loadings were significant and greater than .75 ($p < .01$). Also, the scale items on each construct displayed an acceptable internal consistency ($\alpha > .80$). Table 16 presents the results of the correlations among the three constructs, such as TRA attitude, subjective norm, and behavioral intention. The correlations between the TRA constructs were significant ($p < .01$). Particularly, behavioral intention and subjective norm were strongly correlated to each other ($r = .82$, $p < .01$). According to the CFA results, the validity of the measurement model could be supported.

The structural model was tested as follows: χ^2(30, N = 153) = 2.36, $p < .01$, CFI = .955, NNFI = .917, and RMSEA = .095 (CI: .066 - .123). Although the results indicated an acceptable model fit, the Galileo attitude was not significantly associated with the subjective norm ($p = .90$). After removing the correlation, the model fit was somewhat improved, χ^2(31, N = 153) = 2.29, $p < .01$, CFI = .956, NNFI = .922, RMSEA = .092 (CI: .064 - .120). As presented in Figure 9, all coefficients were significant in the final model, accounting for 74% of the variance in behavioral intention. Specifically, subjective norm and TRA attitude were positive predictors of behavioral intention. Their standardized effects were .69 and .28, respectively ($p < .01$). Conversely, the Galileo attitude was inversely associated with behavioral intention, -.16 ($p < .01$). Also, regarding TRA attitude, the associations of subjective norm and the Galileo attitude were positive, respectively .46 ($p < .01$) and .17 ($p < .05$).

Discussion

The principal objective of this chapter was to evaluate the effectiveness of the Galileo message strategy for IDCs. This chapter also examined the theoretical assumption of the message strategy and the validity of the Galileo spatial-linkage model to predict future behavior.

To evaluate the message effectiveness, experimental research was conducted, based on a between-subject design including a control group and two message treatment groups. The results indicated that the Galileo message had a significant effect on the attitude change toward international aid. That is, the locations of international aid in message treatment groups were closer to the targets' selves than its location in the control group.

On the contrary, the difference between the treatment groups (one-time message and two-time message) was not found. Their distances between international aid and the self-concept were almost the same. As a result, psychological reactance, the so-called boomerang effect (Brehm & Brehm, 1981), might be considered a possible cause. It is an anticonformity tendency that people try to protect their original beliefs when they feel any influences to restrict their freedom and force them into any specific behaviors (Brehm & Brehm, 1981; Myers, 2008). However, as shown in Figure 3, it seems to be unreasonable that the boomerang effect occurred because of the differences in the locations of international aid among the groups. Compared with the control group, the location of international aid was laterally and vertically changed in the two-time message group space. Although the lateral movement was somewhat smaller than that in the one-time message group, the vertical change was definitely larger. That is, the concept locations were different among the three group spaces. If there was a boomerang effect, the location in the two-time message would have been similar to that in one of the other spaces. At this point, the message repetition effect was found through the multidimensional space.

Additionally, this study examined the validity of the Galileo model testing a hypothesized model that the attitude measured by the Galileo model was added in the TRA model. The results supported the inverse relationship between the Galileo attitude and behavioral intention. That is, as the distance between people's selves and international aid is farther apart, people were reluctant to become involved in international aid. This was consistent with the theoretical relationship between attitude and behavior in the Galileo model. Consequently, the validity of the Galileo model could be supported in this study.

The results also revealed that the Galileo attitude measure is superior to the TRA attitude measure. In the final model, the TRA attitude had a relatively strong relationship with the subjective norm, whereas the Galileo attitude was not related to the construct. Fazio and Olson (2003) indicated the social-desirability biases of direct attitude measures. When people are directly asked regarding their attitudes toward prosocial behaviors, people tend to conceal their real attitudes and provide socially desirable answers. This causes an inconsistency between attitudes and behaviors (Fazio, 1990; Fazio & Olson, 2003). In this study, bias was identified through the relationship between the Galileo attitude and the TRA attitude. They were positively related to each other. That is, as the distance between people's selves and international aid is farther apart, their TRA attitude is favorable. This indicates the limitation of the TRA attitude measure. Conversely, the Galileo model can be considered an adequate measure of implicit real attitudes without social-desirability bias.

Conclusion

In conclusion, this chapter examined the message effectiveness and theoretical validity of the Galileo model in the area of IDCs. Experimental research statistically supported a significant effect of the Galileo message strategy. Although the effect of the message repetition

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was statistically nonsignificant, the effect could be examined in the Galileo space. That is, the locations of international aid in the three groups were different from each other. Also, this chapter tested the theoretical assumption of the Galileo message strategy, and it was statistically supported that the persuasive message for IDCs indirectly facilitates attitude change toward international aid by forcing the relevant concepts (education, health, and human rights) to be close to international aid. In addition, the chapter provided evidence for the theoretical validity of the Galileo model regarding the relationship between attitudes and future behaviors.

Chapter V. General Discussion

Summary

This dissertation began with a discussion of the theoretical criticisms of traditional international development campaigns using negative message framings. Conventionally, IDCs have focused on the emotional stimulation of messages rather than the quality of message content. This trend ignored positive public awareness, a substantial goal of charity campaigns. Also, recent studies have indicated that the emotional message frames are likely to arouse suspicion about the effectiveness and negatively affect the target audiences' attitudes toward recipients. Concerning the limitations of the traditional campaign strategy, the main purpose of this study was to explore a persuasive message strategy with quality content that considers the positive public attitudes toward international aid.

In Chapter II, the Galileo spatial-linkage model was discussed as a theoretical perspective for this study. The Galileo model considers interattitude structures based on the neural systems of human brains. In this model, an attitude toward a concept (attitude object) emerges from the complex interrelationships between the concept and all related concepts. Through the categorization process, interrelationships define the concept's similarity or dissimilarity to other concepts. The relational structure can be presented in a Galileo space, a cognitive map representing the biological neural network of the brain. Through the associations between the self-concept and all other concepts, attitudes can be measured as the cognitive distance between the self-concept and designated concepts in the Galileo space.

In Chapter III, a persuasive message strategy for IDCs was suggested through the Galileo analysis. The results of a semantic network analysis noted that the messages of current IDCs mainly focused on poverty, education, and health issues for their fundamental mission, help the

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world. The results of the Galileo analysis identifying the target audiences' attitudes revealed that using the concept of poverty is not relevant in the persuasion of the target audience. Also, they indicated that the expected effectiveness of the current message strategy is relatively weak. Considering several concepts (education, health, and human rights) that are closely associated with the target audiences' selves in the Galileo space, a recommended message strategy for attitude change emphasizes the close relationships between international aid and the relevant concepts.

In Chapter IV, the effectiveness of the Galileo message strategy was examined. The results supported a significant effect of the message recommended through the Galileo model. In the Galileo space, the messages moved the concept of international aid closer to the self-concept. That is, the persuasive messages for IDCs facilitated positive attitude change toward international aid by enhancing the interrelationships among the concepts. In addition, the chapter supported the theoretical validity of the Galileo model that predicts future behavior. Also, the results revealed that the attitude measure (Galileo attitude) considering interattitude structures is more adequate than the direct attitude measure (TRA attitude) that contains social-desirability biases.

Limitations and Future Study

For future research, several theoretical and methodological challenges can be raised from this study. The first challenge concerns the limited number of concepts. This study considered only 12 concepts, including the self-concept. Although this study focused on the possible attributions of international aid and the selected concepts could be justified as the salient issues of current IDCs, their limited connections could not thoroughly represent the complex interattitude structures of the target audience. Since the neural systems of human brains are

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unlimited and expanding, a theoretical limitation of this study can be suggested, even though the Galileo model mimics the neural network of the brain. However, concerning the sincere responses of the Galileo survey, the number of concepts might be limited as small as possible because the number of concepts is directly related to the number of questions. If only 30 concepts are employed, the number of concept pairs would be 435 pair comparisons. The respondents' ability to concentrate on a large number of questions is worthy of concern. For these contradictory reasons, the optimal number of concepts in the Galileo model should be discussed in future research.

Another challenge arises from the cross-sectional research design of this study. Although the message effectiveness could be supported by confirming the difference in concept locations among three different treatment conditions, this study did not sufficiently describe the dynamic processes of attitude formation and change over time (Chung & Fink, 2008). Specifically, in this study, the effects of message repetition could not be statistically supported, but they were visually found in the Galileo space. Although the location of international aid in the repeated message group space was different from that in other two group spaces, this study could not predict the future direction of the concept over time. For this reason, future studies should consider the dynamics of interattitude structures. This will provide a more detailed understanding of message effectiveness on attitude change.

A third challenge concerns the actual effectiveness of the Galileo message. Actual effectiveness means actual behavioral change, even though many studies have used indices of behavioral intentions to test the actual message effects (Dillard, Shen, & Vail, 2007). This study found perceived message effectiveness by examining the attitude change toward international aid in the Galileo space as well as the inverse relationship between the Galileo attitude and

behavioral intention. However, this study did not investigate the respondents' behavioral change. This study also indicated the possibility of an inconsistency between TRA attitude and behavior caused by social-desirability bias. Conversely, the Galileo attitude was independent of the norm bias, so that the attitude measured through the Galileo analysis might be adequate to predict future behavior. Although the actual effectiveness of the Galileo message can be anticipated from this study, the effectiveness should be further examined in future research.

Significance of the Study

This dissertation tried to find a persuasive message strategy for IDCs through the application of the Galileo model. Traditional studies on IDCs have overlooked the dynamics of interattitude structures and have focused on message framing. The studies' arguments also seemed to be theoretically and empirically ambiguous. An integrative and systematic approach was required. The Galileo model is theoretically based on cognitive complexity. That is, the model considers the complex interrelationships among attitude objects, the dynamics of attitude formation, and the change in a multidimensional cognitive space reflecting neural systems of the human brain. In the Galileo model, an attitude is an emergent property from the complex interrelationships among objects. Also, interattitude structures are flexible and adaptive rather than rigid and fixed. For this reason, the Galileo message strategy is designed to change complex attitude structures by enhancing a cognitive process, i.e., categorization based on the interrelationships among concepts. This dissertation successfully demonstrated that persuasive messages can induce an attitude change without emotional framing. Also, this study supported the theoretical validity of the Galileo model. Consequently, this dissertation provided significant evidence to support the theoretical arguments of interattitude structure and the effectiveness of the Galileo message strategy.

This dissertation also has a practical implication for campaign practitioners of IDCs. The theoretical limitation of current IDCs has been discussed. The results of this study suggest that using the concept of poverty might be ineffective for persuading people to support international development because poverty is not relevant to the target audience. Using the concept of poverty in current IDCs might be related to their conventional message strategy that elicits feelings of guilt and sympathy. However, the concept literally has a negative meaning and does not have positive associations for the target audience. Although the concept has been used with other concepts consistent for the target audience, education and health, the expected message effects are weak. Also, the negative concept might lead people to develop a negative attitudinal bias. Concerning these problems, a recommended message strategy in this study excluded the negative concept, poverty, as well as emotional framing. The test of the message effectiveness resulted in a significant attitude change toward international aid. The results could have practical implications for campaign practitioners who want to design persuasive messages with quality content that considers positive public awareness.

In conclusion, this dissertation supported the theoretical perspective of the Galileo model considering interattitude structure, and provided the practical implication of the Galileo message strategy in the area of IDCs. Hopefully, this study shed light on the understanding of theoretical application of the Galileo model.

Table 1

Excluded words (159 words) for CATPAC analysis

A	COME	HER	MISTER	SAW	UNTIL
ABOUT	COMMITTED	HERE	MORE	SAY	US
AFTER	COULD	HERS	MOST	SEE	USE
ALL	DID	HER'S	MRS	SHE	USING
ALSO	DIDN'T	HI	MUCH	SHLL	VERILY
ALTHOUGH	DO	HIM	MUST	SHOULD	VERY
AN	DOES	HIMSELF	MY	SINCE	WAS
AND	DONE	HIS	NIETHER	SO	WE
ANOTHER	DURING	HOW	NO	SOME	WENT
ANY	EACH	IF	NOR	THAN	WERE
ARE	ECT	IN	NOT	THAT	WHAT
AS	EITHER	INTO	NOW	THE	WHEN
AT	EVEN	IS	OF	THEIR	WHERE
BACK	EVERY	ISN'T	OFF	THEIRS	WHICH
BE	EXCLUDE	IT	ON	THEM	WHILE
BECAME	FOR	ITS	ONE	THEN	WHO
BECAUSE	FROM	IT'S	ONLY	THERE	WHY
BEEN	GAVE	JUST	ONTO	THESE	WILL
BEFORE	GET	KEPT	OR	THEY	WITH
BEING	GIVE	LESS	OTHER	THEY'D	WOULD
BESIDES	GOES	LIKE	OUR	THIS	YET
BETWEEN	GONE	MADE	OURS	THOUGH	YOU
BOTH	GOT	MAKE	OUT	THUS	YOUR
BUT	HAD	MANY	OWN	TO	YOURS
BY	HAS	MAY	S	TRIED	
CAME	HAVE	MID	SAID	TRY	
CAN	HE	MISS	SAME	U	

Table 2

Combined words for CATPAC analysis

ORIGINAL WORDS	COMBINED WORDS
CARING	CARE
CHILDREN	CHILD
CHILDREN	CHILD
CHURCHES	CHURCH
COMMUNITIES	COMMUNITY
COUNTRIES	COUNTRY
DEVELOPMENTAL, DEVELOPMENTS	DEVELOPMENT
EDUCATIONS, EDUCATE(S), EDUCATIONAL	EDUCATION
FAMILIES	FAMILY
FOUNDATIONS	FOUNDATION
HELPS	HELP
INDIVIDUALS	INDIVIDUAL
JESUS CHRIST	GOD
LIVES	LIFE
NEEDS	NEED
ORGANIZATIONS	ORGANIZATION
PROGRAMS	PROGRAM
PROVIDES, PROVIDING, PROVIDED	PROVIDE
RESOURCES	RESOURCE
SUPPORTING, SUPPORTED, SUPPORTS	SUPPORT
UNITED NATIONS	UN
WORKS, WORKING, WORKED	WORK
WORLD'S, WORLDWIDE	WORLD

Table 3

List of the 100 most frequently mentioned words in the mission statements of 59 NGOs

Word	Freq.	Freq(%)	Case	Case(%)	Word	Freq.	Freq(%)	Case	Case(%)
WORLD	134	4.7	44	74.6	MILLION	32	1.1	18	30.5
PEOPLE	116	4.1	40	67.8	UN	32	1.1	9	15.3
CHILD	93	3.3	19	32.2	FAMILY	31	1.1	20	33.9
POVERTY	82	2.9	31	52.5	RELIEF	31	1.1	15	25.4
WORK	80	2.8	40	67.8	AROUND	30	1.1	22	37.3
COMMUNITY	72	2.5	34	57.6	COUNTRY	30	1.1	23	39.0
LIFE	63	2.2	34	57.6	USA	30	1.1	13	22.0
DEVELOPMENT	62	2.2	27	45.8	INDIVIDUAL	28	1.0	17	28.8
ORGANIZATION	61	2.1	40	67.8	LOCAL	28	1.0	17	28.8
HELP	59	2.1	27	45.8	MISSION	28	1.0	20	33.9
HUNGER	56	2.0	13	22.0	TOGETHER	28	1.0	16	27.1
THROUGH	55	1.9	29	49.2	CARE	26	0.9	16	27.1
CHURCH	52	1.8	13	22.0	HUMAN	26	0.9	16	27.1
GLOBAL	51	1.8	25	42.4	SOCIAL	25	0.9	14	23.7
PROGRAM	50	1.8	25	42.4	FUND	24	0.8	10	16.9
SUPPORT	47	1.6	27	45.8	WATER	23	0.8	10	16.9
NEED	44	1.5	27	45.8	WOMEN	20	0.7	9	15.3
FOUNDATION	40	1.4	10	16.9	ACTION	19	0.7	11	18.6
EDUCATION	39	1.4	22	37.3	END	19	0.7	11	18.6
PROVIDE	39	1.4	27	45.8	NETWORK	19	0.7	14	23.7
HOPE	37	1.3	19	32.2	PUBLIC	18	0.6	11	18.6
GOD	36	1.3	8	13.6	ASSISTANCE	17	0.6	14	23.7
HEALTH	36	1.3	15	25.4	BUILD	17	0.6	17	28.8
AIDS	35	1.2	12	20.3	ISSUES	17	0.6	15	25.4
AFRICA	34	1.2	12	20.3	LOVE	17	0.6	11	18.6
INTERNATIONAL	34	1.2	25	42.4	RESULTS	17	0.6	1	1.7
POOR	33	1.2	17	28.8	YEAR	17	0.6	10	16.9
RESOURCE	33	1.2	19	32.2	HIV	16	0.6	8	13.6

Table 3

(Continued)

Word	Freq.	Freq(%)	Case	Case(%)	Word	Freq.	Freq(%)	Case	Case(%)
JUSTICE	16	0.6	12	20.3	SOLUTIONS	14	0.5	6	10.2
MINISTRY	16	0.6	9	15.3	SUSTAINABLE	14	0.5	10	16.9
OPPORTUNITIES	16	0.6	13	22.0	THOSE	14	0.5	11	18.6
PARTNERS	16	0.6	11	18.6	TRAINING	14	0.5	10	16.9
PROJECT	16	0.6	4	6.8	VISION	14	0.5	10	16.9
TIME	16	0.6	13	22.0	YEARS	14	0.5	9	15.3
TODAY	16	0.6	12	20.3	BELIEVE	13	0.5	8	13.6
WELL	16	0.6	10	16.9	BETTER	13	0.5	11	18.6
FINANCIAL	15	0.5	10	16.9	FOUNDED	13	0.5	12	20.3
GRASSROOTS	15	0.5	9	15.3	LEADERS	13	0.5	11	18.6
MEMBERS	15	0.5	8	13.6	LIVING	13	0.5	9	15.3
WORLDWIDE	15	0.5	13	22.0	PROJECTS	13	0.5	8	13.6
CHRISTIAN	14	0.5	9	15.3	SUFFERING	13	0.5	9	15.3
CLICK	14	0.5	5	8.5	THEMSELVES	13	0.5	11	18.6
DAY	14	0.5	6	10.2	ADVOCACY	12	0.4	8	13.6
DIFFERENCE	14	0.5	10	16.9	AMERICANS	12	0.4	8	13.6
FAITH	14	0.5	9	15.3	BRING	12	0.4	11	18.6
FOOD	14	0.5	7	11.9	CALL	12	0.4	9	15.3
OVER	14	0.5	10	16.9	CITIZENS	12	0.4	4	6.8
SELF	14	0.5	13	22.0	DONORS	12	0.4	7	11.9
SERVICES	14	0.5	8	13.6	EFFORTS	12	0.4	12	20.3
SOCIETY	14	0.5	10	16.9	EXTREME	12	0.4	8	13.6

Table 4

Mean distance matrix (N = 218)

	1	2	3	4	5	6	7	8	9	10	11	12
1. Poverty	-											
2. Education	65.95	-										
	(3.47)											
3. Health	64.42	46.36	-									
	(3.93)	(3.24)										
4. Human Rights	62.73	40.38	43.49	-								
	(3.35)	(2.91)	(3.23)									
5. Human Resources	62.52	43.00	43.07	46.83	-							
	(3.33)	(2.59)	(2.90)	(3.22)								
6. Natural Resources	58.33	53.99	47.38	52.59	48.97	-						
	(2.88)	(3.09)	(3.08)	(3.31)	(3.37)							
7. Social Safety	67.77	43.45	43.92	39.60	47.00	52.89	-					
	(3.51)	(2.84)	(3.17)	(2.81)	(3.29)	(3.13)						
8. Gov'tal Leadership	71.41	40.38	53.96	44.11	48.01	48.19	43.70	-				
	(3.70)	(2.92)	(3.18)	(3.04)	(3.15)	(3.00)	(3.03)					
9. Global Cooperation	78.59	45.26	55.42	43.20	53.22	48.35	46.50	42.15	-			
	(3.93)	(3.01)	(3.28)	(2.74)	(3.32)	(3.09)	(3.32)	(3.21)				
10. Global Conflict	60.41	62.27	61.72	50.42	58.21	43.27	53.24	41.96	71.98	-		
	(3.70)	(3.61)	(3.70)	(3.30)	(3.40)	(2.99)	(3.41)	(3.31)	(4.17)			
11. International Aid	53.52	54.61	48.68	47.36	48.51	51.98	48.02	44.28	44.73	58.01	-	
	(3.08)	(3.25)	(3.37)	(3.11)	(2.94)	(3.28)	(2.85)	(3.33)	(3.07)	(3.55)		
12. Self	98.21	23.20	30.92	31.92	42.86	63.77	43.50	62.17	58.47	69.55	72.67	-
	(4.32)	(2.44)	(3.01)	(2.50)	(2.91)	(3.54)	(3.03)	(3.40)	(3.32)	(3.83)	(3.72)	

Note. Standard errors are shown in parentheses.

Table 5

Spatial coordinate matrix

	1	2	3	4	5	6	7	8	9	10	11	12
1. Poverty	49.87	-12.03	-20.00	-6.95	5.96	-7.39	2.59	-0.51	-2.73	0.02	-0.77	-13.33
2. Education	-16.15	-1.85	-6.53	-9.89	20.95	-6.19	4.61	9.14	5.24	0.06	-0.58	12.94
3. Health	-10.13	-14.33	-14.77	11.62	-13.81	2.41	-1.10	13.58	-5.12	-0.04	-2.54	9.66
4. Human Rights	-8.72	-2.97	-0.09	-13.24	-6.55	-13.28	-15.01	-8.17	-2.56	-0.02	4.15	10.13
5. Human Resources	-4.57	-8.07	-9.66	6.47	11.73	21.04	-2.30	-13.55	-1.95	0.04	-0.32	6.48
6. Natural Resources	13.42	-0.61	10.16	28.45	2.97	-9.49	3.04	-1.57	2.63	0.01	5.63	1.58
7. Social Safety	-8.03	1.22	2.23	-10.67	-13.87	0.61	21.45	-6.74	-0.19	-0.04	1.81	3.84
8. Gov'tal Leadership	2.10	16.53	20.78	-6.90	7.24	9.16	-0.56	9.83	-7.10	0.02	4.14	-6.43
9. Global Cooperation	-10.64	34.46	-4.09	7.26	1.40	-8.94	-0.31	-5.24	-2.25	0.00	-6.93	-2.46
10. Global Conflicts	20.79	-15.85	33.30	-3.12	-3.43	1.50	-3.13	-0.84	2.83	-0.01	-6.45	2.95
11. International Aid	17.81	18.91	-11.32	-3.63	-11.94	11.69	-6.89	4.28	8.58	-0.04	1.79	-2.12
12. Self	-45.74	-15.42	-0.03	0.60	-0.66	-1.13	-2.40	-0.20	2.62	0.00	0.07	-23.24
Eigenvalues	6150.35	2736.77	2547.44	1545.75	1255.96	1112.14	792.46	709.60	222.35	-0.01	-169.60	-1200.75
Variance (%)	36.02	16.03	14.92	9.05	7.36	6.51	4.64	4.16	1.30	0.00	12.38	87.62

Table 6

Mean distance matrix of control group (N = 65)

	1	2	3	4	5	6	7	8	9	10	11	12
1. Poverty	-											
2. Education	58.30	-										
	(6.76)											
3. Health	68.52	62.16	-									
	(8.96)	(7.02)										
4. Human Rights	72.94	53.34	65.02	-								
	(7.07)	(6.66)	(7.33)									
5. Human Resources	75.20	61.03	64.49	60.31	-							
	(7.70)	(7.66)	(8.13)	(7.22)								
6. Natural Resources	77.71	75.95	64.15	80.18	71.71	-						
	(10.21)	(7.91)	(5.88)	(6.86)	(5.46)							
7. Social Safety	62.98	57.52	57.03	62.89	65.80	71.58	-					
	(6.22)	(7.44)	(7.41)	(7.40)	(6.72)	(8.64)						
8. Gov'tal Leadership	74.34	54.98	66.48	64.41	62.27	70.58	55.27	-				
	(8.01)	(5.04)	(6.92)	(6.94)	(6.35)	(6.80)	(6.59)					
9. Global Cooperation	76.60	69.09	69.79	66.03	56.90	64.79	61.60	56.79	-			
	(8.30)	(7.30)	(6.44)	(7.25)	(6.59)	(8.08)	(5.17)	(6.42)				
10. Global Conflict	59.56	62.98	78.72	76.95	59.80	64.34	71.52	58.37	61.44	-		
	(6.20)	(5.09)	(7.90)	(9.16)	(5.56)	(6.96)	(9.15)	(7.81)	(7.17)			
11. International Aid	56.72	68.52	64.67	60.28	68.40	77.26	68.06	60.98	58.87	74.34	-	
	(6.76)	(7.04)	(6.80)	(5.94)	(7.51)	(7.65)	(6.72)	(7.83)	(7.32)	(8.34)		
12. Self	94.27	38.26	33.41	51.67	56.03	56.00	62.87	93.79	74.18	84.05	104.94	-
	(7.85)	(5.73)	(5.48)	(7.89)	(6.02)	(5.32)	(7.20)	(9.20)	(6.59)	(7.85)	(9.44)	

Note. Standard errors are shown in parentheses.

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Table 7

Mean distance matrix of one-time message group (N = 59)

	1	2	3	4	5	6	7	8	9	10	11	12
1. Poverty	-											
2. Education	60.29	-										
	(7.65)											
3. Health	53.12	59.07	-									
	(7.18)	(6.92)										
4. Human Rights	57.44	47.95	50.32	-								
	(6.26)	(6.29)	(6.53)									
5. Human Resources	63.28	59.46	49.46	53.67	-							
	(8.29)	(7.51)	(5.50)	(4.95)								
6. Natural Resources	60.97	63.97	58.75	60.71	65.45	-						
	(6.81)	(6.94)	(6.67)	(7.64)	(6.44)							
7. Social Safety	58.36	56.41	51.81	47.90	50.33	69.09	-					
	(6.65)	(7.35)	(5.73)	(5.84)	(5.38)	(7.94)						
8. Gov'tal Leadership	68.98	57.64	65.50	49.92	54.71	81.07	58.11	-				
	(8.52)	(7.02)	(7.58)	(6.40)	(6.57)	(9.35)	(7.19)					
9. Global Cooperation	71.67	53.76	56.55	49.81	54.21	57.35	61.16	51.46	-			
	(8.87)	(6.97)	(6.01)	(5.87)	(6.39)	(6.23)	(6.56)	(6.09)				
10. Global Conflict	44.24	57.32	63.45	51.36	55.61	53.37	70.05	52.03	76.93	-		
	(6.29)	(6.02)	(8.02)	(5.67)	(7.23)	(6.12)	(8.23)	(5.57)	(8.99)			
11. International Aid	60.97	55.76	55.64	49.36	60.38	72.90	58.90	50.93	52.88	66.40	-	
	(8.54)	(7.41)	(6.12)	(6.41)	(6.41)	(7.82)	(6.51)	(6.04)	(6.83)	(8.25)		
12. Self	113.47	33.07	37.69	50.16	58.79	59.97	53.81	93.29	78.67	83.59	76.93	-
	(10.22)	(5.32)	(5.00)	(7.68)	(6.73)	(7.00)	(6.28)	(9.19)	(8.12)	(9.02)	(7.18)	

Note. Standard errors are shown in parentheses.

Table 8

Mean distance matrix of two-time message group (N = 94)

	1	2	3	4	5	6	7	8	9	10	11	12
1. Poverty	-											
2. Education	60.24	-										
	(6.14)											
3. Health	56.81	45.33	-									
	(6.40)	(4.63)										
4. Human Rights	59.37	46.00	45.64	-								
	(6.01)	(6.37)	(4.79)									
5. Human Resources	59.30	54.96	44.63	53.56	-							
	(6.09)	(5.62)	(5.40)	(6.11)								
6. Natural Resources	58.53	55.56	55.24	63.17	62.16	-						
	(5.50)	(4.84)	(5.35)	(5.56)	(6.05)							
7. Social Safety	50.96	49.84	47.88	45.89	52.65	58.63	-					
	(5.02)	(5.36)	(4.94)	(4.47)	(5.01)	(5.47)						
8. Gov'tal Leadership	61.46	50.70	54.60	47.62	61.36	68.34	49.13	-				
	(5.89)	(5.69)	(6.08)	(5.11)	(6.25)	(6.36)	(5.52)					
9. Global Cooperation	61.46	53.01	55.97	48.91	58.41	57.96	48.84	45.23	-			
	(5.87)	(4.93)	(6.17)	(4.71)	(5.91)	(5.10)	(5.23)	(5.07)				
10. Global Conflict	42.41	53.59	64.53	59.86	56.76	49.73	65.20	51.52	62.87	-		
	(4.83)	(5.25)	(7.10)	(6.91)	(5.10)	(5.49)	(6.15)	(5.79)	(6.69)			
11. International Aid	49.63	47.88	50.93	55.65	48.40	57.05	52.70	50.97	53.97	53.25	-	
	(5.77)	(4.57)	(5.33)	(5.50)	(4.71)	(5.94)	(5.58)	(6.01)	(6.65)	(5.36)		
12. Self	81.90	34.65	31.23	39.45	54.46	51.43	51.79	73.72	66.17	63.58	80.70	-
	(7.00)	(4.96)	(4.15)	(5.07)	(5.06)	(5.48)	(5.84)	(6.67)	(6.18)	(5.50)	(7.03)	

Note. Standard errors are shown in parentheses.

Table 9

Rotated coordinate matrix of control group

	1	2	3	4	5	6	7	8	9	10	11	12
1. Poverty	-28.86	-22.71	36.77	-1.61	-10.77	3.85	-3.59	1.01	-0.44	6.28	-0.01	-3.80
2. Education	10.93	-25.98	7.55	-21.96	4.64	-15.02	2.25	16.89	-10.33	-3.50	0.05	19.36
3. Health	20.93	-20.28	8.22	27.67	0.50	2.30	21.30	8.69	12.35	-0.76	-0.01	18.18
4. Human Rights	9.84	-36.14	-18.82	-4.74	-15.17	-18.94	-9.88	-11.50	9.54	1.04	0.06	14.10
5. Human Resources	7.26	-1.27	-19.03	-12.57	-19.48	15.88	17.93	-7.31	-9.06	0.70	-0.05	10.35
6. Natural Resources	12.91	27.86	12.11	24.76	-4.58	-19.54	-2.82	-6.50	-8.00	-0.13	0.06	13.70
7. Social Safety	1.70	-19.91	1.54	7.67	26.65	15.22	-12.17	-9.84	-1.90	-4.82	-0.05	8.38
8. Gov'tal Leadership	-24.54	-3.92	-19.03	-3.08	25.46	-15.82	15.72	-0.19	1.20	3.87	0.05	-10.30
9. Global Cooperation	-9.78	8.70	-26.07	9.53	-6.11	6.67	-16.78	19.06	3.39	2.23	-0.02	6.97
10. Global Conflicts	-18.99	20.78	11.60	-23.50	-6.07	-3.29	3.03	-0.19	13.87	-6.65	0.01	2.84
11. International Aid	-39.73	-25.98	-8.57	23.45	-17.25	-7.84	4.74	3.20	-4.82	-7.75	0.02	-11.73
12. Self	60.30	-9.53	2.10	-1.21	-5.10	-2.97	-1.32	3.95	0.93	-1.48	0.01	-28.14
Eigenvalues	7982.84	4391.54	3584.51	3256.93	2462.63	1715.93	1580.61	1050.92	725.66	193.30	-0.02	-2243.00
Variance (%)	29.63	16.30	13.30	12.09	9.14	6.37	5.87	3.90	2.69	0.72	0.00	100.00

Table 10

Rotated coordinate matrix of one-time message group

	1	2	3	4	5	6	7	8	9	10	11	12
1. Poverty	-36.96	-12.28	34.39	-2.63	-12.87	5.57	-5.89	1.44	1.24	0.00	2.22	-20.99
2. Education	19.35	2.69	7.64	-12.57	15.09	8.90	-5.46	23.62	10.10	-0.02	4.30	23.38
3. Health	15.91	-23.90	4.68	12.77	-15.56	-10.56	12.46	3.41	3.37	0.01	1.39	21.90
4. Human Rights	5.46	-9.88	-5.81	-12.36	-1.21	-12.56	-16.88	6.83	10.42	-0.02	4.70	15.42
5. Human Resources	3.44	-2.76	-17.15	-8.13	-13.35	16.51	13.87	-9.05	-6.72	-0.02	4.92	12.48
6. Natural Resources	11.88	26.60	19.23	18.63	-12.14	-10.94	-9.32	-3.54	-8.02	0.06	9.31	15.01
7. Social Safety	6.98	-25.92	-0.01	5.23	18.69	11.79	-7.82	-13.37	-4.11	-0.03	-2.95	16.08
8. Gov'tal Leadership	-27.86	-2.72	-22.11	-11.55	19.95	-8.15	10.25	6.96	9.81	-0.03	9.01	-3.94
9. Global Cooperation	-9.34	5.02	-24.71	20.87	-1.77	0.47	-14.76	20.62	-2.25	0.09	-9.35	0.16
10. Global Conflicts	-12.96	16.41	20.04	-23.00	-3.27	-10.95	13.03	-5.98	8.77	-0.06	-11.48	8.19
11. International Aid	-7.88	-17.13	-8.42	-13.80	4.84	-19.38	-9.90	12.64	-19.18	0.02	0.34	7.60
12. Self	64.82	-4.34	-9.70	0.58	4.76	-4.29	0.65	2.93	1.28	-0.02	-1.68	-26.99
Eigenvalues	7827.49	4345.07	2733.29	2572.83	2035.52	1484.57	1166.23	880.62	638.46	0.02	-449.09	-2835.96
Variance (%)	33.05	18.35	11.54	10.86	8.59	6.27	4.92	3.72	2.70	0.00	13.67	86.33

Table 11

Rotated coordinate matrix of two-time message group

	1	2	3	4	5	6	7	8	9	10	11	12
1. Poverty	-27.67	-12.40	26.26	-1.74	-8.93	3.57	-4.52	0.54	-1.86	4.83	0.02	-7.64
2. Education	13.56	-2.68	3.64	2.58	7.88	2.84	15.45	23.32	7.86	-14.17	-0.01	11.13
3. Health	16.81	-22.58	-3.28	7.94	-9.37	-11.35	14.07	3.27	-6.66	7.31	-0.01	12.99
4. Human Rights	11.83	-11.37	-6.36	-17.25	11.14	-4.00	-8.64	16.28	-16.93	1.47	-0.04	9.81
5. Human Resources	6.29	-4.30	-11.81	-10.57	-18.97	18.35	16.07	-9.65	-9.96	0.85	0.00	4.91
6. Natural Resources	11.05	23.25	15.29	19.11	-7.08	-11.27	-4.33	-5.59	-5.82	-0.69	0.06	6.74
7. Social Safety	2.87	-18.63	-1.32	10.93	17.93	13.77	-7.67	-8.31	-3.84	-2.58	-0.04	8.73
8. Gov'tal Leadership	-18.83	-3.86	-19.20	-6.42	22.93	-12.40	10.04	3.93	5.20	3.16	-0.06	-4.82
9. Global Cooperation	-9.82	3.83	-24.96	12.25	-0.34	2.19	-15.06	16.70	1.23	3.62	-0.05	1.48
10. Global Conflicts	-12.20	17.71	16.26	-19.55	-4.79	-8.89	6.04	-2.45	10.63	-4.86	0.05	9.87
11. International Aid	-22.25	1.68	0.69	8.99	-0.50	5.32	22.81	9.20	-22.82	-6.67	-0.02	-8.52
12. Self	48.30	-5.61	-0.52	-4.01	-0.75	-5.34	-0.57	4.83	4.43	-4.34	0.02	-19.26
Eigenvalues	5126.79	3281.89	2271.85	1837.26	1657.82	1312.11	887.08	879.40	689.47	6.99	0.02	-1105.73
Variance (%)	28.56	18.28	12.66	10.24	9.24	7.31	4.94	4.90	3.84	0.04	0.00	100.00

Table 12

Distances and correlations of concepts between control group and treatment groups

	Control & One-time		Control & Two-time	
	Distance	Correlation	Distance	Correlation
Poverty	10.20i	0.97	14.56	0.98
Education*	49.06	0.35	45.71	0.36
Health*	30.30	0.78	36.17	0.67
Human Rights*	41.88	0.59	57.44	0.19
Human Resources	8.59	0.99	7.26	0.98
Natural Resources	13.89	0.96	10.06	0.98
Social Safety	10.84	0.95	11.46	0.97
Gov'tal Leadership	14.84	0.94	9.89	0.98
Global Cooperation	11.92	0.95	8.41	0.97
Global Conflicts	13.93	0.94	10.20	0.96
International Aid*	63.91	0.19	49.97	0.54
Self	17.11	0.97	11.91	0.99

Note. * Manipulated free concepts.

Table 13

Comparison of manipulated concept pair distances between control group and treatment groups

	Control (N = 65)	One-time (N = 59)		Two-time (N = 94)	
	Distance	Distance	Δ	Distance	Δ
Edu & Health	62.16 (7.02)	59.07 (6.92)	-3.09	45.33 (4.63)	-16.83
Edu & HR	53.34 (6.66)	47.95 (6.29)	-5.39	46.00 (6.37)	-7.34
Edu & Aid	68.52 (7.04)	55.76 (7.41)	-12.75	47.88 (4.57)	-20.64
Health & HR	65.02 (7.33)	50.32 (6.53)	-14.69	45.64 (4.79)	-19.38
Health & Aid	64.67 (6.80)	55.64 (6.12)	-9.03	50.93 (5.33)	-13.75
HR & Aid	60.28 (5.94)	49.36 (6.41)	-10.92	55.65 (5.50)	-4.63
Aid & Self	104.94 (9.44)	76.93 (7.18)	-28.01	80.70 (7.03)	-24.24

Note. Standard errors are shown in parentheses. Δ = Distance in each treatment group – Distance in control group.

Table 14

Correlations among observed variables in the measurement model (N = 153)

	Mean	*SD*	1	2	3	4	5	6	7	8	9
1. A1	90.91	67.80	-								
2. A2	103.33	64.33	0.72	-							
3. A3	102.06	68.45	0.83	0.84	-						
4. SN1	45.72	50.75	0.29	0.24	0.30	-					
5. SN2	44.83	49.83	0.27	0.19	0.26	0.66	-				
6. SN3	52.17	52.65	0.49	0.38	0.45	0.63	0.66	-			
7. IN1	51.29	53.44	0.42	0.39	0.37	0.57	0.41	0.61	-		
8. IN2	53.36	57.02	0.48	0.44	0.45	0.58	0.45	0.65	0.70	-	
9. IN3	64.25	65.96	0.48	0.44	0.49	0.52	0.49	0.56	0.61	0.71	-

Note. The observed variables are scaled measurements for attitude (A), subjective norm (SN) and Intention (IN). All correlation coefficients are significant at $p < .05$.

Table 15

Standardized confirmatory factor loadings in the measurement model

Factors	α	Factor loading
TRA Attitude	0.93	
A1		0.85
A2		0.86
A3		0.95
Subjective norm	0.85	
SN1		0.78
SN2		0.76
SN3		0.86
Behavioral Intention	0.86	
IN1		0.78
IN2		0.88
IN3		0.80

Note. All factor loadings are significant at *p* < .01.

Table 16

Correlations among latent variables in the measurement model (N = 153)

	1	2	3
1. TRA Attitude	-		
2. Subjective norm	0.46	-	
3. Intention	0.57	0.82	-

Note. All correlation coefficients are significant at $p < .01$.

Figure Captions

Figure 1 Dendogram representing the co-occurring clusters within the 59 mission statements

> *Note*. The options of CATPAC were set up as follows: learning rate is .005 and decay rate is .9.

Figure 2 Semantic network of the 35 most frequent words in the 59 mission statements

> *Note*. The sizes of nodes represent the frequency of words in the given texts. The thickness of links depends on the degree of the co-occurring relationships between words.

Figure 3 Visualized configuration of a set of concepts in the three-dimensional space

Figure 4 Illustration of the message optimizing procedure

Figure 5 TRA model regarding attitude, subject norm and behavioral intention

Figure 6 Hypothesized research model regarding Galileo attitude, TRA attitude, subject norm and behavioral intention

Figure 7 Visualized concept locations among groups in the three-dimensional space

Figure 8 Measurement model

Figure 9 Results of the final model for testing the Galileo model validity

> *Note.* All path coefficients are significant, $p < .05$.

Figure 1

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A C G L P N A E P H O W T D S I P F C M P H R R U F U G A C H W P H C
F O L I O E I D R E R O H E U N R A H I O O E E S O N O R O E O E U H
R U O F V E D U O A G R R V P T O M I L L O P S L A U . D O M L R O N U
I N B E E D S C V L A K O E P E G I L L R E O I . N . . U M P L P G R C
C T A . R . . A I T N . U L O R R L D I . . U E . D . . N U . D L E C
A R L . T . . T D H I . G O R N A Y . O . . R F . A . . D N . . E R H
. Y . . Y . . I E . Z . H P T A M . . N . . C . . T . . . I . . . . .
. . . . . . . O . . A . . M . T . I . . . . . E . . I . . T . . . . .
. . . . . . N . T . . E . I . O . . . . . . . . O . . . Y . . . . . .
. . . . . . . . I . . I . N . T . . . . . . . . N . . . . . . . . . .
. . . . . . . . O . . O . . . N . . . . . . . . . . . . . . . . . . .
. . . . . . . . N . . N . . . A . . . . . . . . . . . . . . . . . . .
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Figure 2

CHURCH
FOUNDATION
GOD
HUNGER
UN

PROGRAM
RELIEF
THROUGH
USA
WORK
ORGANIZATION
COMMUNITY
RESOURCE
LIFE
COUNTRY
WORLD
MILLION
EDUCATION
POVERTY
HEALTH
HELP
HOPE
PROVIDE
AFRICA
POOR
GLOBAL
NEED
AIDS
PEOPLE
SUPPORT
FAMILY
CHILD
AROUND
DEVELOPMENT
INTERNATIONAL

Figure 3

Figure 4

Health

Education

Target
(Self)

International
aid

Angle (θ)

Resultant

Distance between resultant location
and target location

Human
Rights

Figure 5

Figure 6

Figure 7

Control Group
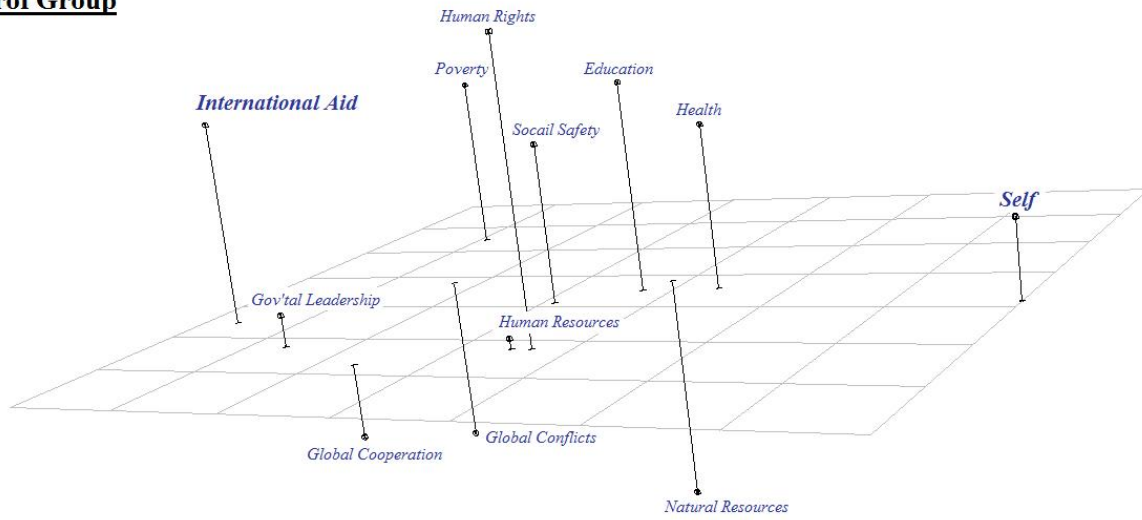
One-time Message Group
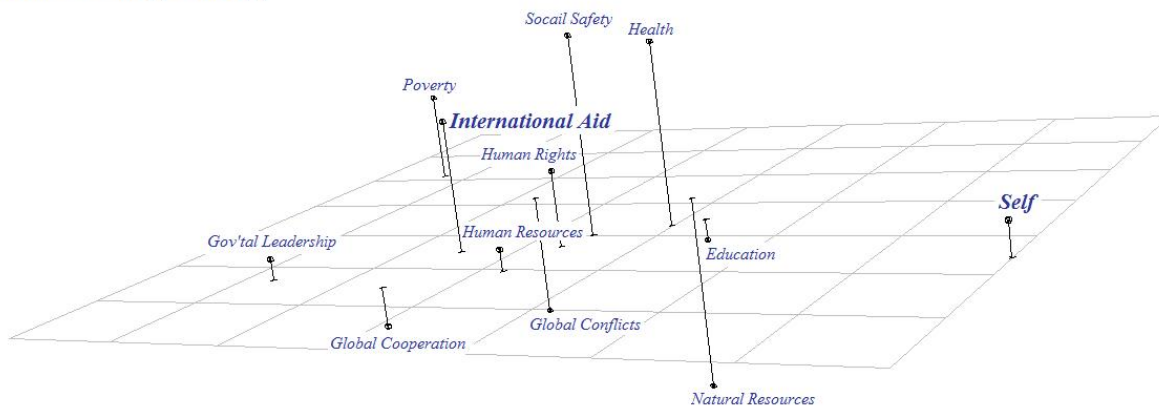
Two-time Message Group
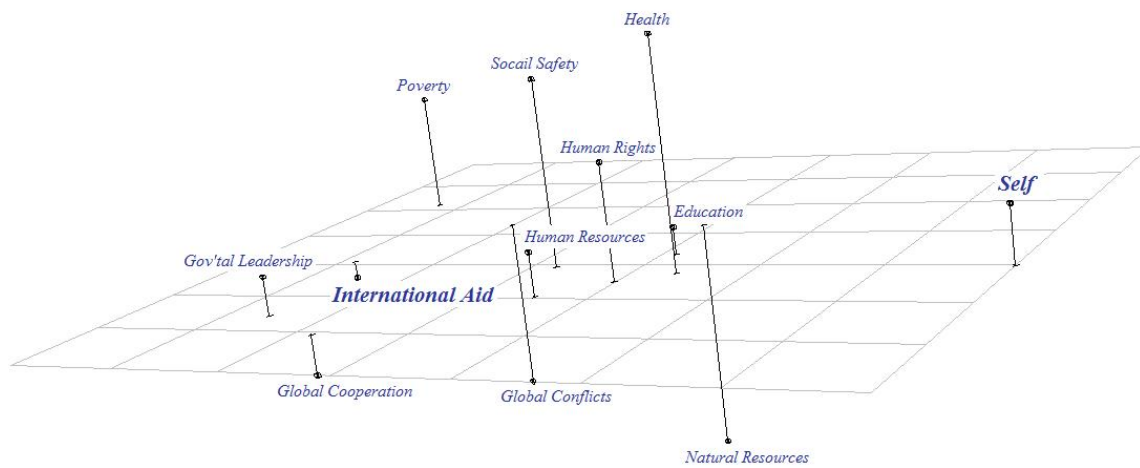
Figure 8
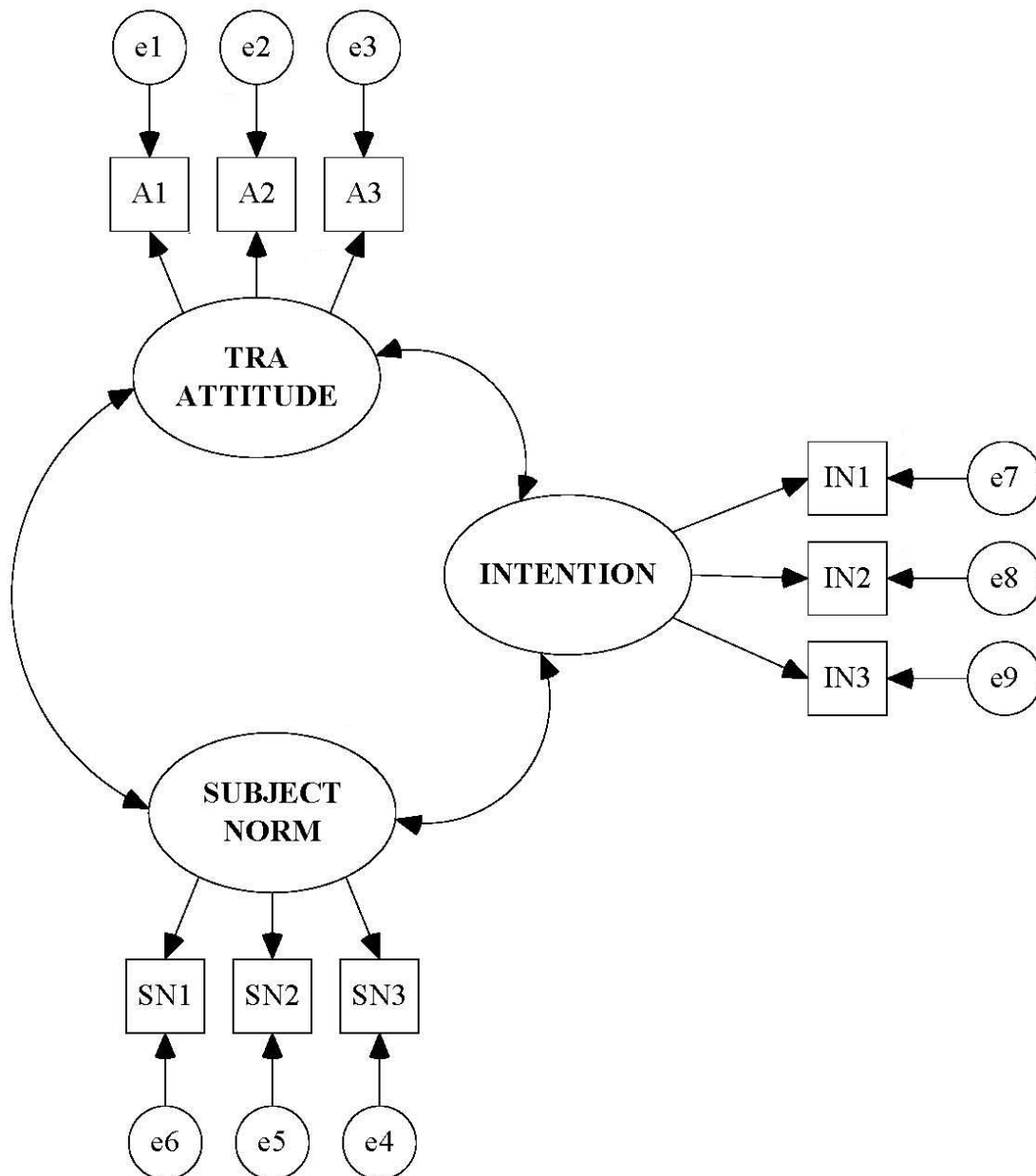
Figure 9
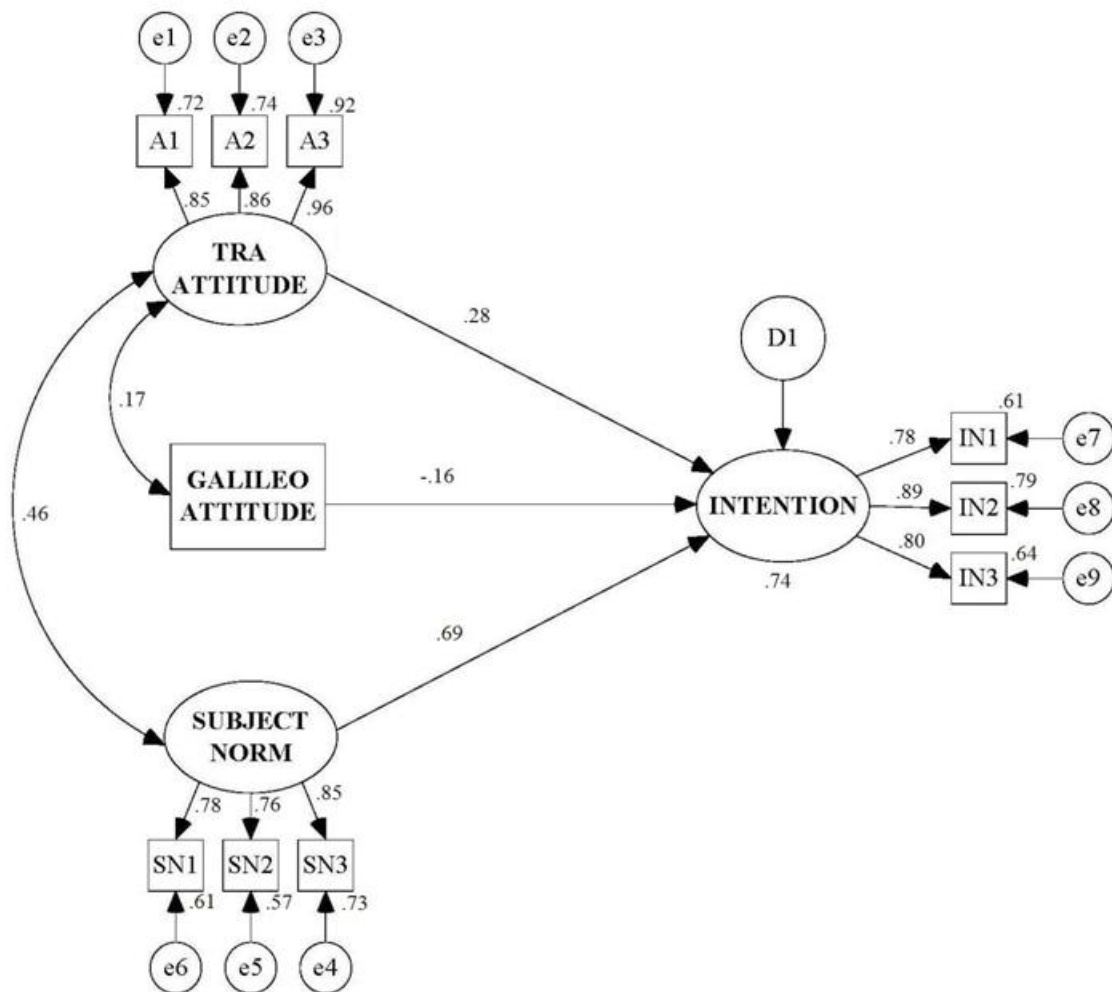
Appendix A. Survey questionnaire for Chapter III

Part I. Galileo Survey

Instruction: You will find a list of paired words or phrases. Please tell how different or how "far apart" each word or phrase is from the other in the pair. The MORE DIFFERENT they are the LARGER number you should enter. If there is NO DIFFERENCE between them, enter 0. To help you know what size number to write, think about this phrase:

COOPERATION and CONFLICT are 100 units apart.

If any two concepts seem twice as different as GLOBAL COOPERATION and GLOBAL CONFLICT, you might enter 200. If they are only half as different, you might write 50. There is no limit to the size of the number you may enter. If you don't know an answer, just leave it blank.

1. POVERTY and EDUCATION are _____ units apart.
2. POVERTY and HEALTH are _____ units apart.
3. POVERTY and HUMAN RIGHTS are _____ units apart.
4. POVERTY and HUMAN RESOURCES are _____ units apart.
5. POVERTY and NATURAL RESOURCES are _____ units apart.
6. POVERTY and SOCIAL SAFETY are _____ units apart.
7. POVERTY and GOVERNMENTAL LEADERSHIP are _____ units apart.
8. POVERTY and GLOBAL COOPERATION are _____ units apart.
9. POVERTY and GLOBAL CONFLICT are _____ units apart.
10. POVERTY and INTERNATIONAL AID are _____ units apart.
11. POVERTY and MYSELF are _____ units apart.
12. EDUCATION and HEALTH are _____ units apart.
13. EDUCATION and HUMAN RIGHTS are _____ units apart.
14. EDUCATION and HUMAN RESOURCES are _____ units apart.
15. EDUCATION and NATURAL RESOURCES are _____ units apart.
16. EDUCATION and SOCIAL SAFETY are _____ units apart.
17. EDUCATION and GOVERNMENTAL LEADERSHIP are _____ units apart.
18. EDUCATION and GLOBAL COOPERATION are _____ units apart.
19. EDUCATION and GLOBAL CONFLICT are _____ units apart.
20. EDUCATION and INTERNATIONAL AID are _____ units apart.
21. EDUCATION and MYSELF are _____ units apart.
22. HEALTH and HUMAN RIGHTS are _____ units apart.
23. HEALTH and HUMAN RESOURCES are _____ units apart.
24. HEALTH and NATURAL RESOURCES are _____ units apart.
25. HEALTH and SOCIAL SAFETY are _____ units apart.
26. HEALTH and GOVERNMENTAL LEADERSHIP are _____ units apart.
27. HEALTH and GLOBAL COOPERATION are _____ units apart.

28. HEALTH and GLOBAL CONFLICT are _____ units apart.
29. HEALTH and INTERNATIONAL AID are _____ units apart.
30. HEALTH and MYSELF are _____ units apart.
31. HUMAN RIGHTS and HUMAN RESOURCES are _____ units apart.
32. HUMAN RIGHTS and NATURAL RESOURCES are _____ units apart.
33. HUMAN RIGHTS and SOCIAL SAFETY are _____ units apart.
34. HUMAN RIGHTS and GOVERNMENTAL LEADERSHIP are _____ units apart.
35. HUMAN RIGHTS and GLOBAL COOPERATION are _____ units apart.
36. HUMAN RIGHTS and GLOBAL CONFLICT are _____ units apart.
37. HUMAN RIGHTS and INTERNATIONAL AID are _____ units apart.
38. HUMAN RIGHTS and MYSELF are _____ units apart.
39. HUMAN RESOURCES and NATURAL RESOURCES are _____ units apart.
40. HUMAN RESOURCES and SOCIAL SAFETY are _____ units apart.
41. HUMAN RESOURCES and GOVERNMENTAL LEADERSHIP are _____ units apart.
42. HUMAN RESOURCES and GLOBAL COOPERATION are _____ units apart.
43. HUMAN RESOURCES and GLOBAL CONFLICT are _____ units apart.
44. HUMAN RESOURCES and INTERNATIONAL AID are _____ units apart.
45. HUMAN RESOURCES and MYSELF are _____ units apart.
46. NATURAL RESOURCES and SOCIAL SAFETY are _____ units apart.
47. NATURAL RESOURCES and GOVERNMENTAL LEADERSHIP are _____ units apart.
48. NATURAL RESOURCES and GLOBAL COOPERATION are _____ units apart.
49. NATURAL RESOURCES and GLOBAL CONFLICT are _____ units apart.
50. NATURAL RESOURCES and INTERNATIONAL AID are _____ units apart.
51. NATURAL RESOURCES and MYSELF are _____ units apart.
52. SOCIAL SAFETY and GOVERNMENTAL LEADERSHIP are _____ units apart.
53. SOCIAL SAFETY and GLOBAL COOPERATION are _____ units apart.
54. SOCIAL SAFETY and GLOBAL CONFLICT are _____ units apart.
55. SOCIAL SAFETY and INTERNATIONAL AID are _____ units apart.
56. SOCIAL SAFETY and MYSELF are _____ units apart.
57. GOVERNMENTAL LEADERSHIP and GLOBAL COOPERATION are _____ units apart.
58. GOVERNMENTAL LEADERSHIP and GLOBAL CONFLICT are _____ units apart.
59. GOVERNMENTAL LEADERSHIP and INTERNATIONAL AID are _____ units apart.
60. GOVERNMENTAL LEADERSHIP and MYSELF are _____ units apart.
61. GLOBAL COOPERATION and GLOBAL CONFLICT are _____ units apart.
62. GLOBAL COOPERATION and INTERNATIONAL AID are _____ units apart.
63. GLOBAL COOPERATION and MYSELF are _____ units apart.
64. GLOBAL CONFLICT and INTERNATIONAL AID are _____ units apart.
65. GLOBAL CONFLICT and MYSELF are _____ units apart.
66. INTERNATIONAL AID and MYSELF are _____ units apart.

Continue to next page

Part II. Demographic Questions

1. Please indicate your citizenship: _____

2. Please indicate your age: _____

3. Please indicate your gender:
    ___1. Male
    ___2. Female

4. Please indicate you ethnicity:
    ___1. African American/Black
    ___2. Asian/Asian American/Pacific Islander
    ___3. Caucasian
    ___4. Latino/Hispanic
    ___5. Multiracial
    ___6. Native American/American Indian
    ___7. Other

Thank you for your participation.

Appendix B. Co-occurrence matrix representing focusing on the 35 most frequent words in the 59 mission statements

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
1. AFRICA	0.99	0.99	-0.22	0.13	-0.38	-0.05	0.99	0.26	0.99	0.14	-0.02	0.99	-0.08	0.99	0.64	0.13	-0.36	0.23	0.99	0.12	0.99	0.42	0.05	0.11	0.99	0.23	0.99	0.06	0.11	0.24	0.30	-0.05	0.03	0.41	0.66
2. AIDS	0.99	0.99	-0.22	0.13	-0.37	-0.05	0.99	0.26	0.99	0.14	-0.02	0.99	-0.08	0.99	0.64	0.13	-0.36	0.23	0.99	0.12	0.99	0.42	0.05	0.11	0.99	0.23	0.99	0.06	0.11	0.24	0.30	-0.05	0.03	0.41	0.66
3. AROUND	-0.22	-0.22	0.21	-0.45	-0.14	-0.22	-0.22	-0.60	-0.22	-0.47	-0.53	-0.22	-0.45	-0.22	0.12	-0.50	-0.07	-0.56	-0.23	-0.52	-0.22	-0.61	-0.15	-0.50	-0.22	-0.50	-0.22	-0.54	-0.47	-0.54	-0.61	-0.53	-0.45	-0.67	0.12
4. CHILD	0.13	0.13	-0.45	0.10	-0.53	-0.54	0.13	-0.23	0.13	-0.06	-0.15	0.13	-0.23	0.13	-0.16	-0.19	-0.51	-0.26	0.12	-0.14	0.13	-0.18	-0.60	-0.13	0.13	-0.20	0.13	-0.23	-0.27	-0.19	-0.25	-0.15	-0.13	-0.23	-0.16
5. CHURCH	-0.38	-0.37	-0.14	-0.53	0.22	-0.22	-0.38	-0.52	-0.38	-0.57	-0.45	-0.37	-0.25	-0.37	-0.05	-0.44	-0.02	-0.60	-0.37	-0.52	-0.38	-0.70	-0.29	-0.45	-0.38	-0.55	-0.38	-0.37	-0.45	-0.60	-0.55	-0.43	-0.43	-0.70	-0.06
6. COMMUNITY	-0.05	-0.05	-0.22	-0.54	-0.22	0.21	-0.05	-0.43	-0.05	-0.57	-0.58	-0.05	-0.57	-0.05	0.26	-0.49	-0.20	-0.50	-0.04	-0.55	-0.05	-0.50	-0.17	-0.55	-0.05	-0.42	-0.05	-0.47	-0.49	-0.61	-0.49	-0.59	-0.47	-0.52	0.25
7. COUNTRY	0.99	0.99	-0.22	0.13	-0.38	-0.05	0.99	0.26	0.99	0.14	-0.02	0.99	-0.08	0.99	0.64	0.13	-0.36	0.23	0.99	0.12	0.99	0.42	0.05	0.11	0.99	0.23	0.99	0.06	0.11	0.24	0.30	-0.05	0.03	0.41	0.66
8. DEVELOPMENT	0.26	0.26	-0.60	-0.23	-0.52	-0.43	0.26	0.09	0.26	-0.23	-0.23	0.26	-0.27	0.26	-0.07	-0.25	-0.58	-0.17	0.26	-0.26	0.26	-0.14	-0.48	-0.18	0.26	-0.17	0.26	-0.12	-0.18	-0.20	-0.11	-0.25	-0.26	-0.15	-0.06
9. EDUCATION	0.99	0.99	-0.22	0.13	-0.38	-0.05	0.99	0.26	0.99	0.14	-0.02	0.99	-0.08	0.99	0.64	0.13	-0.36	0.23	0.99	0.12	0.99	0.42	0.05	0.11	0.99	0.23	0.99	0.06	0.11	0.24	0.30	-0.05	0.03	0.41	0.66
10. FAMILY	0.14	0.14	-0.47	-0.06	-0.57	-0.57	0.14	-0.23	0.14	0.10	-0.14	0.14	-0.28	0.14	-0.15	-0.23	-0.53	-0.23	0.14	-0.09	0.14	-0.19	-0.54	-0.12	0.14	-0.19	0.14	-0.26	-0.26	-0.19	-0.21	-0.22	-0.18	-0.20	-0.16
11. FOUNDATION	-0.02	-0.02	-0.53	-0.15	-0.45	-0.58	-0.02	-0.23	-0.02	-0.14	0.10	-0.02	-0.13	-0.02	-0.31	-0.16	-0.46	-0.17	-0.03	-0.06	-0.02	-0.26	-0.71	-0.12	-0.02	-0.21	-0.02	-0.17	-0.20	-0.13	-0.23	-0.06	-0.15	-0.26	-0.32
12. GLOBAL	0.99	0.99	-0.22	0.13	-0.37	-0.05	0.99	0.26	0.99	0.14	-0.02	0.99	-0.08	0.99	0.64	0.13	-0.36	0.23	0.99	0.12	0.99	0.42	0.05	0.11	0.99	0.23	0.99	0.06	0.11	0.24	0.30	-0.05	0.03	0.41	0.66
13. GOD	-0.08	-0.08	-0.45	-0.23	-0.25	-0.57	-0.08	-0.27	-0.08	-0.28	-0.13	-0.08	0.13	-0.08	-0.37	-0.12	-0.38	-0.30	-0.07	-0.25	-0.08	-0.40	-0.62	-0.13	-0.08	-0.27	-0.08	-0.08	-0.15	-0.28	-0.31	-0.09	-0.16	-0.41	-0.38
14. HEALTH	0.99	0.99	-0.22	0.13	-0.37	-0.05	0.99	0.26	0.99	0.14	-0.02	0.99	-0.08	0.99	0.64	0.13	-0.36	0.23	0.99	0.12	0.99	0.42	0.05	0.11	0.99	0.23	0.99	0.06	0.11	0.24	0.30	-0.05	0.03	0.41	0.66
15. HELP	0.64	0.64	0.12	-0.16	-0.05	0.26	0.64	-0.07	0.64	-0.15	-0.31	0.64	-0.37	0.64	0.93	-0.16	-0.01	-0.06	0.64	-0.17	0.64	0.08	0.36	-0.18	0.64	-0.08	0.64	-0.24	-0.17	-0.08	-0.02	-0.33	-0.24	0.08	0.94
16. HOPE	0.13	0.13	-0.50	-0.19	-0.44	-0.49	0.13	-0.25	0.13	-0.23	-0.16	0.13	-0.12	0.13	-0.16	0.08	-0.53	-0.25	0.12	-0.18	0.13	-0.26	-0.55	-0.14	0.13	-0.26	0.13	-0.15	-0.21	-0.22	-0.22	-0.21	-0.24	-0.23	-0.16
17. HUNGER	-0.36	-0.36	-0.07	-0.51	-0.02	-0.20	-0.36	-0.58	-0.36	-0.53	-0.46	-0.36	-0.38	-0.36	-0.01	-0.53	0.22	-0.57	-0.36	-0.44	-0.36	-0.68	-0.20	-0.51	-0.36	-0.53	-0.35	-0.44	-0.37	-0.65	-0.58	-0.48	-0.35	-0.71	-0.02
18. INTERNATIONAL	0.23	0.23	-0.56	-0.26	-0.60	-0.50	0.23	-0.17	0.23	-0.23	-0.17	0.23	-0.30	0.23	-0.06	-0.25	-0.57	0.08	0.24	-0.20	0.23	-0.12	-0.47	-0.21	0.23	-0.24	0.23	-0.23	-0.21	-0.22	-0.20	-0.21	-0.22	-0.17	-0.07
19. LIFE	0.99	0.99	-0.23	0.12	-0.37	-0.04	0.99	0.26	0.99	0.14	-0.03	0.99	-0.07	0.99	0.64	0.12	-0.36	0.24	1.00	0.11	0.99	0.42	0.05	0.10	1.00	0.23	0.99	0.05	0.11	0.24	0.29	-0.05	0.03	0.41	0.66
20. MILLION	0.12	0.12	-0.52	-0.14	-0.52	-0.55	0.12	-0.26	0.12	-0.09	-0.06	0.12	-0.25	0.12	-0.17	-0.18	-0.44	-0.20	0.11	0.09	0.12	0.12	-0.56	-0.16	0.12	-0.23	0.12	-0.23	-0.28	-0.16	-0.18	-0.19	-0.16	-0.25	-0.19
21. NEED	0.99	0.99	-0.22	0.13	-0.38	-0.05	0.99	0.26	0.99	0.14	-0.02	0.99	-0.08	0.99	0.64	0.13	-0.36	0.23	0.99	0.12	0.99	0.42	0.05	0.11	0.99	0.23	0.99	0.06	0.11	0.24	0.30	-0.05	0.03	0.41	0.66
22. ORGANIZATION	0.42	0.42	-0.61	-0.18	-0.70	-0.50	0.42	-0.14	0.42	-0.19	-0.26	0.42	-0.40	0.42	0.08	-0.26	-0.68	-0.12	0.42	-0.21	0.42	0.16	-0.52	-0.22	0.42	-0.22	0.42	-0.30	-0.32	-0.08	-0.14	-0.33	-0.23	-0.05	0.09
23. PEOPLE	0.05	0.05	-0.15	-0.60	-0.29	-0.17	0.05	-0.48	0.05	-0.54	-0.71	0.05	-0.62	0.05	0.36	-0.55	-0.20	-0.47	0.05	-0.56	0.05	-0.52	0.21	-0.50	0.05	-0.49	0.05	-0.56	-0.48	-0.59	-0.48	-0.67	-0.57	-0.47	0.36
24. POOR	0.11	0.11	-0.50	-0.13	-0.45	-0.55	0.11	-0.18	0.11	-0.12	-0.12	0.11	-0.13	0.11	-0.18	-0.14	-0.51	-0.21	0.10	-0.16	0.11	-0.22	-0.50	0.07	0.11	-0.20	0.11	-0.14	-0.17	-0.15	-0.20	-0.22	-0.20	-0.24	-0.20
25. POVERTY	0.99	0.99	-0.22	0.13	-0.38	-0.05	0.99	0.26	0.99	0.14	-0.02	0.99	-0.08	0.99	0.64	0.13	-0.36	0.23	1.00	0.12	0.99	0.42	0.05	0.11	0.99	0.23	0.99	0.06	0.11	0.24	0.29	-0.05	0.03	0.42	0.66
26. PROGRAM	0.23	0.23	-0.50	-0.20	-0.55	-0.42	0.23	-0.17	0.23	-0.19	-0.21	0.23	-0.27	0.23	-0.08	-0.26	-0.53	-0.24	0.23	-0.23	0.23	-0.22	-0.49	-0.20	0.23	0.09	0.23	-0.27	-0.18	-0.18	-0.20	-0.28	-0.23	-0.22	-0.08
27. PROVIDE	0.99	0.99	-0.22	0.13	-0.38	-0.05	0.99	0.26	0.99	0.14	-0.02	0.99	-0.08	0.99	0.64	0.13	-0.35	0.23	0.99	0.12	0.99	0.42	0.05	0.11	0.99	0.23	0.99	0.06	0.11	0.24	0.30	-0.05	0.03	0.41	0.66
28. RELIEF	0.06	0.06	-0.54	-0.23	-0.37	-0.47	0.06	-0.12	0.06	-0.26	-0.17	0.06	-0.08	0.06	-0.24	-0.15	-0.44	-0.23	0.05	-0.23	0.06	-0.30	-0.56	-0.14	0.06	-0.27	0.06	0.09	-0.14	-0.28	-0.22	-0.19	-0.16	-0.30	-0.25
29. RESOURCE	0.11	0.11	-0.47	-0.27	-0.45	-0.49	0.11	-0.18	0.11	-0.26	-0.20	0.11	-0.15	0.11	-0.17	-0.21	-0.37	-0.21	0.11	-0.28	0.11	-0.32	-0.48	-0.17	0.11	-0.18	0.11	-0.14	0.10	-0.30	-0.24	-0.23	-0.14	-0.30	-0.17
30. SUPPORT	0.24	0.24	-0.54	-0.19	-0.60	-0.61	0.24	-0.20	0.24	-0.19	-0.13	0.24	-0.28	0.24	-0.08	-0.22	-0.65	-0.22	0.24	-0.16	0.24	-0.08	-0.59	-0.15	0.24	-0.18	0.24	-0.28	-0.30	0.12	-0.22	-0.20	-0.22	-0.12	-0.07
31. THROUGH	0.30	0.30	-0.61	-0.25	-0.55	-0.49	0.30	-0.11	0.30	-0.21	-0.23	0.30	-0.31	0.30	-0.02	-0.22	-0.58	-0.20	0.29	-0.18	0.30	-0.14	-0.48	-0.20	0.29	-0.20	0.30	-0.22	-0.24	-0.22	0.09	-0.30	-0.31	-0.16	-0.01
32. UN	-0.05	-0.05	-0.53	-0.15	-0.43	-0.59	-0.05	-0.25	-0.05	-0.22	-0.06	-0.05	-0.09	-0.05	-0.33	-0.21	-0.48	-0.21	-0.05	-0.19	-0.05	-0.33	-0.67	-0.22	-0.05	-0.28	-0.05	-0.19	-0.23	-0.20	-0.30	0.13	-0.11	-0.31	-0.34
33. USA	0.03	0.03	-0.45	-0.13	-0.43	-0.47	0.03	-0.26	0.03	-0.18	-0.15	0.03	-0.16	0.03	-0.24	-0.24	-0.35	-0.22	0.03	-0.16	0.03	-0.23	-0.57	-0.20	0.03	-0.23	0.03	-0.16	-0.14	-0.22	-0.31	-0.11	0.10	-0.35	-0.26
34. WORK	0.41	0.41	-0.67	-0.23	-0.70	-0.52	0.41	-0.15	0.41	-0.20	-0.26	0.41	-0.41	0.41	0.08	-0.23	-0.71	-0.17	0.41	-0.25	0.41	-0.05	-0.47	-0.24	0.42	-0.22	0.41	-0.30	-0.30	-0.12	-0.16	-0.31	-0.35	0.15	0.09
35. WORLD	0.66	0.66	0.12	-0.16	-0.06	0.25	0.66	-0.06	0.66	-0.16	-0.32	0.66	-0.38	0.66	0.94	-0.16	-0.02	-0.07	0.66	-0.19	0.66	0.09	0.36	-0.20	0.66	-0.08	0.66	-0.25	-0.17	-0.07	-0.01	-0.34	-0.26	0.09	0.97

Appendix C. Coordinate matrix regarding real variance (11 dimensions)

	1	2	3	4	5	6	7	8	9	10	11
1. AFRICA	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2. AIDS	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3. AROUND	0.39	-0.02	0.17	-0.06	0.03	-0.03	0.02	0.00	0.00	0.00	0.01
4. CHILD	-0.12	-0.05	0.11	-0.01	0.07	-0.01	-0.03	0.06	-0.01	0.03	0.00
5. CHURCH	0.38	-0.16	-0.10	-0.08	0.03	0.02	0.01	-0.01	-0.02	0.00	0.00
6. COMMUNIT	0.35	0.18	-0.07	0.06	0.12	0.01	0.00	0.00	0.01	0.00	0.01
7. COUNTRY	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8. DEVELOPM	-0.12	0.09	-0.14	0.01	0.03	-0.03	-0.01	0.01	-0.05	0.02	0.00
9. EDUCATIO	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10. FAMILY	-0.13	0.00	0.13	-0.01	-0.04	0.01	-0.05	0.03	-0.01	0.04	0.01
11. FOUNDATI	-0.15	-0.17	0.01	0.04	0.04	0.03	-0.01	-0.05	0.01	0.00	0.03
12. GLOBAL	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13. GOD	-0.03	-0.23	-0.06	-0.06	-0.03	-0.03	0.00	0.00	0.00	-0.01	0.00
14. HEALTH	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15. HELP	0.03	0.03	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
16. HOPE	-0.09	-0.04	-0.04	-0.10	0.04	0.04	0.02	0.02	0.09	-0.01	0.00
17. HUNGER	0.40	-0.11	0.03	0.10	-0.05	0.03	-0.02	0.00	0.01	0.00	0.00
18. INTERNAT	-0.14	0.09	-0.01	0.06	-0.07	0.01	0.11	-0.02	0.01	0.01	0.02
19. LIFE	0.01	0.00	0.00	-0.01	0.00	0.00	0.00	0.00	-0.01	0.00	-0.01
20. MILLION	-0.11	-0.04	0.07	0.04	-0.04	0.12	-0.03	-0.03	0.00	-0.02	-0.01
21. NEED	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22. ORGANIZA	-0.22	0.18	0.04	0.03	0.04	0.01	0.02	0.03	-0.01	-0.04	0.01
23. PEOPLE	0.37	0.28	0.00	-0.04	-0.09	0.00	0.02	0.00	-0.01	0.00	-0.01
24. POOR	-0.10	-0.04	0.00	-0.10	-0.07	-0.02	-0.02	0.03	-0.03	-0.02	0.02
25. POVERTY	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
26. PROGRAM	-0.09	0.07	0.02	0.03	0.04	-0.10	-0.08	-0.05	0.02	0.00	0.00
27. PROVIDE	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28. RELIEF	-0.06	-0.09	-0.15	0.02	0.00	0.02	0.00	0.05	-0.01	-0.01	0.00
29. RESOURCE	-0.03	-0.05	-0.06	0.06	-0.10	-0.09	-0.02	0.01	0.04	-0.01	-0.01
30. SUPPORT	-0.20	0.02	0.08	-0.09	0.02	-0.03	0.04	-0.05	-0.03	-0.03	-0.01
31. THROUGH	-0.14	0.10	-0.08	-0.01	-0.02	0.07	-0.07	-0.02	-0.02	0.00	0.00
32. UN	-0.12	-0.18	-0.01	0.02	0.02	0.00	0.06	-0.02	-0.02	0.04	-0.02
33. USA	-0.04	-0.11	0.05	0.11	0.02	-0.02	0.03	0.04	-0.02	-0.04	-0.01
34. WORK	-0.23	0.21	-0.02	-0.03	0.00	0.01	0.01	0.00	0.03	0.03	-0.01
35. WORLD	0.03	0.04	0.01	0.00	0.01	0.00	0.00	-0.01	0.00	0.00	0.00
Eigenvalues	1.02	0.40	0.15	0.08	0.07	0.04	0.04	0.02	0.02	0.01	0.00
Variance (%)	55.40	21.47	7.94	4.41	3.54	2.39	1.94	1.17	1.04	0.53	0.17

Appendix D. The results of the Galileo message optimizing procedure

Code	Concept	Code	Concept
1	POVERTY	7	SOCIAL SAFETY
2	EDUCATION	8	GOVERNMENTAL LEADERSHIP
3	HEALTH	9	GLOBAL COOPERATION
4	HUMAN RIGHTS	10	GLOBAL CONFLICTS
5	HUMAN RESOURCES	11	INTERNATIONAL AID
6	NATURAL RESOURCES	12	SELF

Message Solutions

Start (ST) is 11   Target (TG) is 12   Distance to Target is 72.67

Message	θ	r	ST-R	TG-R	TG-CAP	ST-CAP	% Remaining
2	13.30	0.97	54.61	23.20	16.69	70.72	31.93
3	18.90	0.95	48.68	30.92	23.52	68.76	42.55
4	19.10	0.95	47.36	31.92	23.75	68.68	43.92
5	34.70	0.82	48.50	42.86	41.36	59.75	58.98
6	58.80	0.52	51.98	63.77	62.14	37.67	87.75
7	35.30	0.82	48.02	43.50	42.01	59.29	59.85
8	58.40	0.53	44.28	62.17	61.86	38.12	85.55
9	53.50	0.59	44.73	58.47	58.45	43.18	80.46
10	63.10	0.45	58.00	69.55	64.83	32.82	95.71
11	0.00	1.00	0.00	72.67	0.00	72.67	100.00
01-02	60.00	0.50	42.85	63.28	62.94	36.32	87.08
01-03	63.30	0.45	39.74	65.29	64.91	32.67	89.85
01-04	64.20	0.44	39.62	65.94	65.45	31.58	90.74
01-05	68.50	0.37	40.39	69.02	67.63	26.59	94.98
01-07	67.60	0.38	37.91	67.97	67.20	27.66	93.54
01-09	74.20	0.27	29.81	70.62	69.91	19.82	97.19
02-03	i						19.93
02-04	i						26.50
02-05	7.90	0.99	46.96	26.93	9.97	71.98	37.06
02-06	29.40	0.87	45.97	39.67	35.68	63.31	54.59
02-07	7.90	0.99	46.61	27.26	9.96	71.98	37.51
02-08	32.80	0.84	45.43	42.36	39.35	61.09	58.29
02-09	26.40	0.90	44.49	38.29	32.27	65.11	52.70
02-10	32.30	0.85	46.95	41.46	38.85	61.41	57.05
02-11	13.30	0.97	27.31	46.52	16.69	70.72	64.01
03-04	i						31.21
03-05	9.40	0.99	43.56	30.54	11.92	71.68	42.03
03-06	34.80	0.82	44.43	44.16	41.43	59.70	60.76
03-07	8.30	0.99	43.08	30.69	10.55	71.90	42.23

Message Solutions (continued)

Message	θ	r	ST-R	TG-R	TG-CAP	ST-CAP	% Remaining
03-08	24.00	0.91	37.91	41.02	29.51	66.41	56.45
03-09	15.30	0.97	37.65	37.68	19.16	70.10	51.85
03-10	34.30	0.83	43.76	44.10	41.00	60.00	60.68
03-11	18.90	0.95	24.34	50.26	23.52	68.76	69.16
04-05	i						40.81
04-06	31.80	0.85	42.20	43.02	38.33	61.74	59.21
04-07	14.70	0.97	43.39	32.61	18.41	70.30	44.87
04-08	32.20	0.85	40.19	44.22	38.77	61.46	60.85
04-09	28.80	0.88	40.68	41.86	34.96	63.71	57.60
04-10	40.40	0.76	46.56	47.88	47.06	55.37	65.89
04-11	19.10	0.95	23.68	50.88	23.75	68.68	70.02
05-06	40.40	0.76	43.91	48.50	47.14	55.30	66.74
05-07	20.30	0.94	42.16	36.23	25.24	68.14	49.85
05-08	37.50	0.79	39.75	47.69	44.19	57.69	65.63
05-09	29.90	0.87	38.32	43.82	36.20	63.01	60.29
05-10	42.60	0.74	44.85	49.90	49.14	53.53	68.67
05-11	34.70	0.82	24.25	54.50	41.36	59.75	75.00
06-07	38.90	0.78	42.48	47.75	45.62	56.56	65.70
06-08	53.20	0.60	41.84	58.18	58.16	43.57	80.06
06-09	50.50	0.64	42.03	56.20	56.04	46.27	77.33
06-10	58.40	0.53	50.65	63.12	61.86	38.13	86.85
06-11	58.80	0.52	25.99	63.23	62.14	37.67	87.01
07-08	39.90	0.77	40.69	49.00	46.64	55.73	67.43
07-09	35.00	0.82	40.16	45.99	41.73	59.49	63.28
07-10	44.90	0.71	46.12	51.54	51.25	51.51	70.92
07-11	35.30	0.82	24.01	54.86	42.01	59.29	75.49
08-09	50.60	0.64	39.20	56.55	56.12	46.17	77.82
08-10	58.40	0.52	47.14	62.54	61.88	38.10	86.06
08-11	58.40	0.53	22.14	63.90	61.86	38.12	87.93
09-10	44.90	0.71	37.25	53.22	51.28	51.48	73.24
09-11	53.50	0.59	22.37	62.04	58.45	43.18	85.38
10-11	63.10	0.45	29.00	64.95	64.83	32.82	89.37
01-02-03	41.30	0.75	39.44	50.30	47.96	54.59	69.22
01-02-04	43.00	0.73	39.93	51.31	49.58	53.12	70.61
01-02-05	46.60	0.69	40.13	53.70	52.80	49.93	73.90
01-02-06	55.20	0.57	40.79	59.71	59.70	41.43	82.16
01-02-07	45.40	0.70	38.91	53.12	51.72	51.05	73.10
01-02-08	53.50	0.60	37.03	58.75	58.43	43.21	80.85
01-02-09	48.50	0.66	34.91	56.01	54.42	48.16	77.07
01-02-10	56.60	0.55	41.84	60.72	60.70	39.96	83.56
01-02-11	60.00	0.50	28.57	63.42	62.94	36.32	87.27
01-03-04	43.80	0.72	37.20	52.58	50.33	52.42	72.36
01-03-05	48.10	0.67	37.78	55.18	54.13	48.48	75.93
01-03-06	58.00	0.53	39.45	61.65	61.64	38.49	84.83
01-03-07	46.70	0.69	36.44	54.58	52.91	49.81	75.10
01-03-08	52.60	0.61	32.35	58.91	57.72	44.15	81.07

Message Solutions (continued)

Message	θ	r	ST-R	TG-R	TG-CAP	ST-CAP	% Remaining
01-03-09	46.90	0.68	30.38	56.43	53.03	49.69	77.66
01-03-10	58.70	0.52	39.70	62.10	62.07	37.79	85.46
01-03-11	63.30	0.45	26.49	65.20	64.91	32.67	89.73
01-04-05	48.00	0.67	37.03	55.24	54.01	48.61	76.02
01-04-06	57.90	0.53	38.47	61.54	61.54	38.64	84.69
01-04-07	48.10	0.67	36.73	55.35	54.07	48.55	76.17
01-04-08	55.20	0.57	33.70	60.19	59.69	41.45	82.83
01-04-09	50.90	0.63	32.22	57.99	56.37	45.86	79.81
01-04-10	60.60	0.49	41.21	63.58	63.33	35.64	87.49
01-04-11	64.20	0.44	26.41	65.65	65.45	31.58	90.34
01-05-06	61.50	0.48	39.50	64.06	63.88	34.65	88.16
01-05-07	50.90	0.63	36.30	57.17	56.36	45.87	78.67
01-05-08	58.50	0.52	33.69	62.12	61.97	37.95	85.48
01-05-09	53.10	0.60	31.15	59.43	58.10	43.65	81.78
01-05-10	62.70	0.46	40.55	64.99	64.58	33.31	89.43
01-05-11	68.50	0.37	26.92	67.63	67.63	26.59	93.06
01-06-07	60.50	0.49	37.75	63.26	63.23	35.81	87.05
01-06-08	68.40	0.37	36.14	68.24	67.58	26.71	93.90
01-06-09	65.40	0.42	34.61	66.23	66.08	30.23	91.13
01-06-10	71.30	0.32	44.56	72.05	68.84	23.28	99.15
01-07-08	58.20	0.53	32.98	62.01	61.78	38.26	85.33
01-07-09	53.20	0.60	30.88	59.57	58.22	43.49	81.97
01-07-10	62.80	0.46	40.18	65.02	64.64	33.20	89.47
01-07-11	67.60	0.38	25.27	67.24	67.20	27.66	92.53
01-08-09	62.70	0.46	28.72	64.75	64.59	33.30	89.10
01-08-10	70.70	0.33	39.52	70.34	68.60	23.97	96.80
01-08-11	79.00	0.19	22.48	71.84	71.33	13.90	98.86
01-09-10	64.40	0.43	32.80	65.57	65.56	31.36	90.23
01-09-11	74.20	0.27	19.87	69.91	69.91	19.82	96.21
02-03-04	i						19.82
02-03-05	i						29.52
02-03-06	13.60	0.97	43.27	32.27	17.12	70.62	44.41
02-03-07	i						29.70
02-03-08	7.40	0.99	41.16	32.30	9.39	72.06	44.44
02-03-09	i						39.65
02-03-10	10.90	0.98	42.58	31.90	13.77	71.35	43.90
02-03-11	i						51.94
02-04-05	i						30.80
02-04-06	13.40	0.97	42.78	32.59	16.81	70.70	44.85
02-04-07	i						33.27
02-04-08	18.70	0.95	42.62	35.06	23.27	68.84	48.24
02-04-09	11.50	0.98	42.34	32.29	14.43	71.22	44.43
02-04-10	21.20	0.93	44.37	35.17	26.27	67.75	48.40
02-04-11	i						53.61
02-05-06	22.80	0.92	43.39	36.76	28.20	66.97	50.59
02-05-07	i						37.98

Message Solutions (continued)

Message	θ	r	ST-R	TG-R	TG-CAP	ST-CAP	% Remaining
02-05-08	23.60	0.92	42.30	37.91	29.11	66.58	52.17
02-05-09	14.60	0.97	41.20	34.40	18.32	70.32	47.34
02-05-10	23.80	0.92	43.44	37.30	29.34	66.48	51.33
02-05-11	7.90	0.99	31.31	41.88	9.97	71.98	57.63
02-06-07	21.20	0.93	42.65	36.34	26.29	67.75	50.01
02-06-08	35.40	0.82	42.25	45.39	42.09	59.24	62.46
02-06-09	31.80	0.85	41.84	43.16	38.29	61.76	59.40
02-06-10	38.60	0.78	45.31	46.74	45.30	56.82	64.32
02-06-11	29.40	0.87	30.65	48.37	35.68	63.31	66.56
02-07-08	25.20	0.91	42.58	38.67	30.97	65.74	53.21
02-07-09	18.80	0.95	41.86	35.67	23.36	68.81	49.08
02-07-10	25.90	0.90	43.92	38.30	31.73	65.38	52.71
02-07-11	7.90	0.99	31.07	42.11	9.96	71.98	57.94
02-08-09	33.90	0.83	41.33	44.73	40.50	60.34	61.56
02-08-10	39.50	0.77	44.29	47.67	46.19	56.10	65.60
02-08-11	32.80	0.84	30.29	49.98	39.35	61.09	68.77
02-09-10	26.20	0.90	39.35	41.20	32.08	65.20	56.70
02-09-11	26.40	0.90	29.66	47.94	32.27	65.11	65.97
02-10-11	32.30	0.85	31.30	49.15	38.85	61.41	67.64
03-04-05	i						34.01
03-04-06	16.20	0.96	40.88	35.31	20.28	69.78	48.59
03-04-07	i						36.15
03-04-08	i						47.61
03-04-09	i						44.36
03-04-10	20.90	0.93	41.75	36.81	25.91	67.89	50.65
03-04-11	i						56.67
03-05-06	26.00	0.90	41.87	39.55	31.85	65.32	54.43
03-05-07	i						41.19
03-05-08	16.60	0.96	37.97	37.86	20.76	69.64	52.11
03-05-09	i						47.84
03-05-10	24.60	0.91	41.11	39.21	30.24	66.08	53.96
03-05-11	9.40	0.99	29.04	44.28	11.92	71.68	60.93
03-06-07	24.30	0.91	41.04	39.12	29.95	66.21	53.83
03-06-08	34.40	0.83	38.90	46.17	41.10	59.93	63.53
03-06-09	31.20	0.86	38.82	44.31	37.68	62.14	60.97
03-06-10	41.20	0.75	43.95	49.05	47.86	54.68	67.50
03-06-11	34.80	0.82	29.62	51.20	41.43	59.70	70.46
03-07-08	19.00	0.95	38.24	38.57	23.64	68.72	53.08
03-07-09	9.70	0.99	37.81	35.96	12.23	71.63	49.49
03-07-10	26.70	0.89	41.57	40.12	32.60	64.95	55.21
03-07-11	8.30	0.99	28.72	44.45	10.55	71.90	61.17
03-08-09	25.20	0.90	35.33	43.41	30.99	65.73	59.74
03-08-10	37.80	0.79	40.28	47.72	44.53	57.42	65.67
03-08-11	24.00	0.91	25.27	50.62	29.51	66.41	69.66
03-09-10	20.60	0.94	35.19	41.60	25.53	68.04	57.25
03-09-11	15.30	0.97	25.10	48.90	19.16	70.10	67.30

Message	θ	r	ST-R	TG-R	TG-CAP	ST-CAP	% Remaining
03-10-11	34.30	0.83	29.17	51.29	41.00	60.00	70.59
04-05-06	22.20	0.93	40.19	38.60	27.51	67.26	53.12
04-05-07	i						41.72
04-05-08	20.30	0.94	38.33	39.04	25.18	68.16	53.73
04-05-09	11.70	0.98	37.86	36.41	14.70	71.16	50.11
04-05-10	28.00	0.88	41.84	40.76	34.11	64.17	56.10
04-05-11	i						60.89
04-06-07	23.50	0.92	40.31	39.16	28.98	66.64	53.88
04-06-08	35.70	0.81	38.99	46.92	42.45	58.98	64.57
04-06-09	33.40	0.84	39.25	45.39	40.03	60.65	62.46
04-06-10	42.70	0.74	44.40	50.10	49.28	53.41	68.94
04-06-11	31.80	0.85	28.13	50.98	38.33	61.74	70.15
04-07-08	25.50	0.90	39.59	40.69	31.31	65.58	56.00
04-07-09	21.20	0.93	39.52	38.57	26.28	67.75	53.08
04-07-10	31.80	0.85	43.20	42.56	38.30	61.76	58.56
04-07-11	14.70	0.97	28.92	45.28	18.41	70.30	62.32
04-08-09	34.00	0.83	38.04	46.33	40.68	60.22	63.76
04-08-10	42.80	0.73	42.76	50.46	49.33	53.36	69.44
04-08-11	32.20	0.85	26.79	52.01	38.77	61.46	71.57
04-09-10	32.00	0.85	38.35	45.01	38.53	61.61	61.94
04-09-11	28.80	0.88	27.12	50.60	34.96	63.71	69.63
04-10-11	40.40	0.76	31.04	52.98	47.06	55.37	72.90
05-06-07	29.00	0.88	40.38	42.14	35.18	63.59	57.99
05-06-08	40.50	0.76	39.47	49.75	47.18	55.27	68.47
05-06-09	36.80	0.80	38.87	47.61	43.50	58.21	65.51
05-06-10	45.50	0.70	44.22	52.24	51.81	50.96	71.89
05-06-11	40.40	0.76	29.27	53.85	47.14	55.30	74.10
05-07-08	28.00	0.88	38.64	42.63	34.17	64.14	58.67
05-07-09	20.80	0.94	37.68	39.78	25.84	67.92	54.74
05-07-10	32.70	0.84	41.69	43.80	39.23	61.17	60.28
05-07-11	20.30	0.94	28.11	47.33	25.24	68.14	65.13
05-08-09	35.10	0.82	36.56	47.67	41.82	59.43	65.59
05-08-10	44.30	0.72	41.61	51.82	50.76	52.00	71.31
05-08-11	37.50	0.79	26.50	54.09	44.19	57.69	74.43
05-09-10	31.30	0.86	36.14	45.80	37.72	62.11	63.02
05-09-11	29.90	0.87	25.55	52.09	36.20	63.01	71.69
05-10-11	42.60	0.74	29.90	54.53	49.14	53.53	75.04
06-07-08	40.70	0.76	39.27	49.93	47.35	55.13	68.71
06-07-09	37.70	0.79	39.06	48.11	44.44	57.50	66.21
06-07-10	45.90	0.70	44.24	52.58	52.20	50.56	72.36
06-07-11	38.90	0.78	28.32	53.66	45.62	56.56	73.84
06-08-09	48.80	0.66	38.80	55.39	54.64	47.91	76.22
06-08-10	55.40	0.57	44.88	59.95	59.84	41.22	82.50
06-08-11	53.20	0.60	27.89	60.23	58.16	43.57	82.89
06-09-10	49.10	0.66	40.56	55.35	54.90	47.61	76.17
06-09-11	50.50	0.64	28.02	58.93	56.04	46.27	81.10

Message	θ	r	ST-R	TG-R	TG-CAP	ST-CAP	% Remaining
06-10-11	58.40	0.53	33.76	62.02	61.86	38.13	85.34
07-08-09	38.60	0.78	37.94	49.08	45.30	56.82	67.54
07-08-10	46.20	0.69	42.67	53.00	52.45	50.30	72.93
07-08-11	39.90	0.77	27.13	54.71	46.64	55.73	75.28
07-09-10	35.70	0.81	37.77	47.45	42.45	58.98	65.30
07-09-11	35.00	0.82	26.78	53.02	41.73	59.49	72.97
07-10-11	44.90	0.71	30.75	55.30	51.25	51.51	76.10
08-09-10	48.70	0.66	38.38	55.42	54.59	47.97	76.27
08-09-11	50.60	0.64	26.13	59.59	56.12	46.17	82.00
08-10-11	58.40	0.52	31.43	62.24	61.88	38.10	85.65
09-10-11	44.90	0.71	24.83	57.80	51.28	51.48	79.53
01-02-03-04	29.80	0.87	38.51	43.68	36.14	63.04	60.11
01-02-03-05	33.80	0.83	38.74	45.86	40.43	60.38	63.10
01-02-03-06	42.20	0.74	39.10	51.00	48.83	53.82	70.18
01-02-03-07	32.40	0.84	37.94	45.46	38.99	61.33	62.56
01-02-03-08	38.30	0.79	35.72	49.83	45.05	57.02	68.57
01-02-03-09	32.90	0.84	34.39	47.62	39.50	60.99	65.54
01-02-03-10	42.50	0.74	39.00	51.19	49.06	53.61	70.44
01-02-03-11	41.30	0.75	29.58	54.09	47.96	54.59	74.44
01-02-04-05	34.50	0.82	38.65	46.29	41.12	59.91	63.71
01-02-04-06	42.50	0.74	38.86	51.28	49.14	53.54	70.57
01-02-04-07	34.40	0.83	38.42	46.38	41.08	59.94	63.82
01-02-04-08	41.10	0.75	36.75	51.04	47.75	54.78	70.23
01-02-04-09	36.90	0.80	35.67	49.04	43.58	58.15	67.48
01-02-04-10	44.90	0.71	40.18	52.54	51.32	51.45	72.31
01-02-04-11	43.00	0.73	29.95	54.73	49.58	53.12	75.32
01-02-05-06	45.80	0.70	39.35	53.34	52.14	50.62	73.40
01-02-05-07	36.90	0.80	38.10	47.99	43.62	58.12	66.04
01-02-05-08	43.70	0.72	36.65	52.68	50.23	52.51	72.49
01-02-05-09	38.70	0.78	35.03	50.37	45.48	56.67	69.31
01-02-05-10	46.70	0.69	39.71	53.86	52.90	49.82	74.11
01-02-05-11	46.60	0.69	30.09	56.40	52.80	49.93	77.62
01-02-06-07	44.70	0.71	38.30	52.81	51.09	51.68	72.67
01-02-06-08	51.50	0.62	37.35	57.41	56.87	45.24	79.01
01-02-06-09	48.30	0.67	36.20	55.59	54.25	48.35	76.50
01-02-06-10	54.70	0.58	41.52	59.31	59.31	41.99	81.62
01-02-06-11	55.20	0.57	30.60	60.68	59.70	41.43	83.50
01-02-07-08	43.40	0.73	36.21	52.61	49.93	52.80	72.40
01-02-07-09	38.80	0.78	34.82	50.47	45.50	56.66	69.46
01-02-07-10	46.70	0.69	39.43	53.89	52.87	49.86	74.15
01-02-07-11	45.40	0.70	29.18	56.15	51.72	51.05	77.27
01-02-08-09	46.60	0.69	33.68	55.22	52.76	49.97	75.99
01-02-08-10	53.70	0.59	38.99	58.72	58.59	42.99	80.81
01-02-08-11	53.50	0.60	27.77	60.43	58.43	43.21	83.16
01-02-09-10	46.90	0.68	34.97	55.04	53.04	49.67	75.75
01-02-09-11	48.50	0.66	26.18	58.69	54.42	48.16	80.76

Message Solutions (continued)

Message	θ	r	ST-R	TG-R	TG-CAP	ST-CAP	% Remaining
01-02-10-11	56.60	0.55	31.38	61.30	60.70	39.96	84.35
01-03-04-05	34.60	0.82	36.56	47.36	41.26	59.82	65.18
01-03-04-06	44.00	0.72	37.35	52.65	50.50	52.26	72.45
01-03-04-07	34.50	0.83	36.28	47.42	41.11	59.92	65.26
01-03-04-08	39.00	0.78	33.37	51.24	45.73	56.47	70.51
01-03-04-09	34.30	0.83	32.42	49.41	41.00	60.00	68.00
01-03-04-10	45.80	0.70	38.23	53.53	52.06	50.70	73.67
01-03-04-11	43.80	0.72	27.90	55.98	50.33	52.42	77.04
01-03-05-06	47.70	0.67	38.07	54.81	53.72	48.94	75.42
01-03-05-07	37.50	0.79	36.17	49.17	44.21	57.67	67.66
01-03-05-08	42.50	0.74	33.50	53.02	49.06	53.60	72.97
01-03-05-09	37.00	0.80	31.97	50.89	43.69	58.07	70.03
01-03-05-10	47.90	0.67	37.95	54.97	53.90	48.74	75.64
01-03-05-11	48.10	0.67	28.33	57.76	54.13	48.48	79.48
01-03-06-07	46.40	0.69	36.95	54.27	52.66	50.08	74.68
01-03-06-08	52.00	0.62	34.87	58.09	57.25	44.76	79.94
01-03-06-09	48.80	0.66	33.88	56.44	54.67	47.87	77.66
01-03-06-10	56.60	0.55	40.37	60.67	60.67	40.00	83.49
01-03-06-11	58.00	0.53	29.59	62.28	61.64	38.49	85.70
01-03-07-08	41.90	0.74	32.99	52.94	48.56	54.06	72.85
01-03-07-09	36.80	0.80	31.70	50.97	43.57	58.16	70.14
01-03-07-10	47.80	0.67	37.63	54.98	53.82	48.82	75.65
01-03-07-11	46.70	0.69	27.33	57.49	52.91	49.81	79.11
01-03-08-09	42.80	0.73	29.15	54.97	49.38	53.32	75.65
01-03-08-10	53.90	0.59	36.10	59.07	58.69	42.86	81.29
01-03-08-11	52.60	0.61	24.27	61.05	57.72	44.15	84.01
01-03-09-10	46.20	0.69	31.98	55.56	52.46	50.29	76.46
01-03-09-11	46.90	0.68	22.79	59.46	53.03	49.69	81.83
01-03-10-11	58.70	0.52	29.78	62.58	62.07	37.79	86.12
01-04-05-06	47.00	0.68	37.12	54.58	53.14	49.56	75.11
01-04-05-07	37.80	0.79	35.93	49.47	44.58	57.39	68.08
01-04-05-08	43.80	0.72	33.81	53.66	50.34	52.41	73.85
01-04-05-09	39.20	0.78	32.53	51.70	45.88	56.35	71.14
01-04-05-10	49.20	0.65	38.47	55.75	55.02	47.47	76.72
01-04-05-11	48.00	0.67	27.77	57.90	54.01	48.61	79.67
01-04-06-07	46.60	0.69	36.57	54.44	52.77	49.96	74.92
01-04-06-08	52.80	0.60	35.00	58.58	57.90	43.91	80.62
01-04-06-09	50.00	0.64	34.24	57.07	55.70	46.67	78.53
01-04-06-10	57.50	0.54	40.72	61.29	61.27	39.08	84.34
01-04-06-11	57.90	0.53	28.86	62.32	61.54	38.64	85.75
01-04-07-08	44.50	0.71	33.95	53.99	50.94	51.82	74.29
01-04-07-09	40.50	0.76	32.93	52.20	47.18	55.27	71.83
01-04-07-10	49.90	0.64	38.72	56.15	55.56	46.83	77.27
01-04-07-11	48.10	0.67	27.55	58.01	54.07	48.55	79.82
01-04-08-09	47.40	0.68	31.10	56.45	53.47	49.21	77.69
01-04-08-10	56.30	0.56	37.74	60.48	60.43	40.36	83.23

Message Solutions (continued)

Message	θ	r	ST-R	TG-R	TG-CAP	ST-CAP	% Remaining
01-04-08-11	55.20	0.57	25.27	61.84	59.69	41.45	85.10
01-04-09-10	50.20	0.64	34.04	57.19	55.80	46.55	78.70
01-04-09-11	50.90	0.63	24.17	60.40	56.37	45.86	83.11
01-04-10-11	60.60	0.49	30.91	63.51	63.33	35.64	87.39
01-05-06-07	49.40	0.65	36.73	56.15	55.15	47.32	77.27
01-05-06-08	55.80	0.56	35.42	60.32	60.07	40.89	83.01
01-05-06-09	52.50	0.61	34.11	58.53	57.65	44.24	80.54
01-05-06-10	59.50	0.51	40.71	62.71	62.60	36.91	86.30
01-05-06-11	61.50	0.48	29.63	64.07	63.88	34.65	88.17
01-05-07-08	46.60	0.69	33.46	55.30	52.79	49.94	76.10
01-05-07-09	41.50	0.75	31.83	53.20	48.18	54.40	73.21
01-05-07-10	51.20	0.63	37.89	57.15	56.64	45.53	78.65
01-05-07-11	50.90	0.63	27.22	59.36	56.36	45.87	81.69
01-05-08-09	49.00	0.66	30.22	57.53	54.81	47.71	79.17
01-05-08-10	57.90	0.53	37.13	61.56	61.54	38.65	84.71
01-05-08-11	58.50	0.52	25.27	63.26	61.97	37.95	87.05
01-05-09-10	51.10	0.63	32.78	58.00	56.55	45.63	79.81
01-05-09-11	53.10	0.60	23.37	61.54	58.10	43.65	84.68
01-05-10-11	62.70	0.46	30.41	64.65	64.58	33.31	88.97
01-06-07-08	55.20	0.57	34.65	60.08	59.69	41.44	82.67
01-06-07-09	52.10	0.61	33.56	58.43	57.38	44.60	80.40
01-06-07-10	59.30	0.51	40.15	62.56	62.48	37.10	86.09
01-06-07-11	60.50	0.49	28.31	63.67	63.23	35.81	87.62
01-06-08-09	59.40	0.51	32.59	62.68	62.52	37.03	86.26
01-06-08-10	65.50	0.41	39.89	66.87	66.15	30.08	92.02
01-06-08-11	68.40	0.37	27.10	67.58	67.58	26.71	93.00
01-06-09-10	61.50	0.48	36.32	63.86	63.84	34.72	87.88
01-06-09-11	65.40	0.42	25.96	66.22	66.08	30.23	91.12
01-06-10-11	71.30	0.32	33.42	69.58	68.84	23.28	95.75
01-07-08-09	49.70	0.65	30.42	57.86	55.44	46.98	79.62
01-07-08-10	58.20	0.53	37.19	61.80	61.79	38.24	85.05
01-07-08-11	58.20	0.53	24.74	63.24	61.78	38.26	87.03
01-07-09-10	52.00	0.62	33.12	58.40	57.23	44.79	80.37
01-07-09-11	53.20	0.60	23.16	61.67	58.22	43.49	84.86
01-07-10-11	62.80	0.46	30.13	64.72	64.64	33.20	89.06
01-08-09-10	59.90	0.50	32.71	62.96	62.84	36.49	86.64
01-08-09-11	62.70	0.46	21.54	65.65	64.59	33.30	90.34
01-08-10-11	70.70	0.33	29.64	68.84	68.60	23.97	94.73
01-09-10-11	64.40	0.43	24.60	65.90	65.56	31.36	90.69
02-03-04-05	i						26.27
02-03-04-06	i						38.80
02-03-04-07	i						27.87
02-03-04-08	i						39.76
02-03-04-09	i						36.20
02-03-04-10	i						39.97
02-03-04-11	i						46.04

Message	θ	r	ST-R	TG-R	TG-CAP	ST-CAP	% Remaining
02-03-05-06	8.70	0.99	41.99	31.80	10.99	71.83	43.76
02-03-05-07	i						32.66
02-03-05-08	i						43.63
02-03-05-09	i						39.52
02-03-05-10	1.80	1.00	41.34	31.37	2.32	72.63	43.17
02-03-05-11	i						49.72
02-03-06-07	4.60	1.00	41.47	31.51	5.85	72.43	43.36
02-03-06-08	21.80	0.93	40.22	38.35	26.98	67.48	52.77
02-03-06-09	16.80	0.96	39.88	36.36	20.99	69.57	50.03
02-03-06-10	26.10	0.90	42.43	39.31	32.02	65.23	54.09
02-03-06-11	13.60	0.97	32.45	41.83	17.12	70.62	57.57
02-03-07-08	i						44.31
02-03-07-09	i						40.67
02-03-07-10	7.80	0.99	41.54	32.02	9.90	71.99	44.07
02-03-07-11	i						49.91
02-03-08-09	14.40	0.97	38.46	36.68	18.05	70.39	50.47
02-03-08-10	24.20	0.91	40.75	39.25	29.82	66.27	54.01
02-03-08-11	7.40	0.99	30.87	42.25	9.39	72.06	58.14
02-03-09-10	i						47.25
02-03-09-11	i						55.64
02-03-10-11	10.90	0.98	31.93	41.76	13.77	71.35	57.46
02-04-05-06	5.30	1.00	41.36	31.71	6.65	72.36	43.64
02-04-05-07	i						34.07
02-04-05-08	9.10	0.99	40.77	33.06	11.55	71.74	45.49
02-04-05-09	i						41.90
02-04-05-10	12.80	0.98	42.05	33.02	16.15	70.85	45.44
02-04-05-11	i						50.38
02-04-06-07	7.40	0.99	41.36	32.11	9.41	72.06	44.19
02-04-06-08	24.20	0.91	40.57	39.33	29.74	66.30	54.12
02-04-06-09	20.50	0.94	40.43	37.59	25.48	68.05	51.72
02-04-06-10	28.50	0.88	42.98	40.50	34.71	63.84	55.73
02-04-06-11	13.40	0.97	32.08	42.11	16.81	70.70	57.95
02-04-07-08	14.40	0.97	41.38	34.17	18.06	70.39	47.02
02-04-07-09	4.70	1.00	41.05	31.92	5.89	72.43	43.93
02-04-07-10	17.30	0.96	42.75	34.28	21.58	69.39	47.18
02-04-07-11	i	51.37					
02-04-08-09	23.30	0.92	40.19	39.10	28.69	66.77	53.81
02-04-08-10	29.80	0.87	42.44	41.57	36.09	63.07	57.21
02-04-08-11	18.70	0.95	31.97	43.60	23.27	68.84	60.00
02-04-09-10	18.40	0.95	39.70	37.17	22.93	68.96	51.15
02-04-09-11	11.50	0.98	31.75	42.02	14.43	71.22	57.83
02-04-10-11	21.20	0.93	33.28	43.35	26.27	67.75	59.65
02-05-06-07	15.60	0.96	41.32	34.71	19.58	69.98	47.77
02-05-06-08	28.50	0.88	40.75	41.69	34.71	63.85	57.37
02-05-06-09	24.10	0.91	40.13	39.58	29.65	66.34	54.46
02-05-06-10	31.40	0.85	42.80	42.44	37.82	62.05	58.40

Message Solutions (continued)

Message	θ	r	ST-R	TG-R	TG-CAP	ST-CAP	% Remaining
02-05-06-11	22.80	0.92	32.55	44.50	28.20	66.97	61.24
02-05-07-08	17.70	0.95	40.79	36.00	22.05	69.24	49.54
02-05-07-09	6.90	0.99	39.99	33.31	8.67	72.15	45.84
02-05-07-10	18.70	0.95	41.82	35.68	23.32	68.82	49.11
02-05-07-11	i						53.96
02-05-08-09	24.80	0.91	39.32	40.46	30.43	65.99	55.68
02-05-08-10	31.40	0.85	41.70	42.94	37.81	62.06	59.09
02-05-08-11	23.60	0.92	31.72	45.42	29.11	66.58	62.50
02-05-09-10	18.40	0.95	38.43	38.20	22.99	68.94	52.57
02-05-09-11	14.60	0.97	30.90	43.47	18.32	70.32	59.82
02-05-10-11	23.80	0.92	32.58	44.83	29.34	66.48	61.70
02-06-07-08	28.60	0.88	40.57	41.82	34.77	63.81	57.55
02-06-07-09	24.80	0.91	40.17	39.93	30.48	65.97	54.95
02-06-07-10	31.70	0.85	42.75	42.68	38.18	61.83	58.74
02-06-07-11	21.20	0.93	31.99	44.38	26.29	67.75	61.08
02-06-08-09	35.60	0.81	39.96	46.45	42.34	59.06	63.92
02-06-08-10	41.20	0.75	43.05	49.28	47.89	54.65	67.81
02-06-08-11	35.40	0.82	31.69	50.30	42.09	59.24	69.23
02-06-09-10	34.50	0.83	40.28	45.56	41.11	59.92	62.69
02-06-09-11	31.80	0.85	31.38	48.88	38.29	61.76	67.27
02-06-10-11	38.60	0.78	33.99	50.73	45.30	56.82	69.81
02-07-08-09	27.30	0.89	39.99	41.41	33.32	64.58	56.99
02-07-08-10	33.00	0.84	42.24	43.75	39.55	60.96	60.21
02-07-08-11	25.20	0.91	31.94	45.84	30.97	65.74	63.09
02-07-09-10	22.40	0.93	39.23	39.33	27.66	67.20	54.13
02-07-09-11	18.80	0.95	31.40	44.11	23.36	68.81	60.70
02-07-10-11	25.90	0.90	32.94	45.37	31.73	65.38	62.44
02-08-09-10	35.20	0.82	39.50	46.34	41.85	59.41	63.77
02-08-09-11	33.90	0.83	31.00	50.01	40.50	60.34	68.82
02-08-10-11	39.50	0.77	33.22	51.55	46.19	56.10	70.93
02-09-10-11	26.20	0.90	29.51	47.99	32.08	65.20	66.04
03-04-05-06	7.80	0.99	39.78	33.69	9.87	71.99	46.37
03-04-05-07	i						36.36
03-04-05-08	i						45.65
03-04-05-09	i						42.43
03-04-05-10	11.50	0.98	40.03	34.39	14.51	71.20	47.32
03-04-05-11	i						52.70
03-04-06-07	9.20	0.99	39.75	34.04	11.67	71.72	46.84
03-04-06-08	21.70	0.93	37.93	39.96	26.83	67.53	54.98
03-04-06-09	18.20	0.95	37.98	38.46	22.68	69.04	52.92
03-04-06-10	29.90	0.87	41.52	42.12	36.24	62.98	57.96
03-04-06-11	16.20	0.96	30.66	44.07	20.28	69.78	60.64
03-04-07-08	i						47.14
03-04-07-09	i						44.40
03-04-07-10	16.60	0.96	40.74	35.57	20.72	69.65	48.95
03-04-07-11	i						53.61

Message	θ	r	ST-R	TG-R	TG-CAP	ST-CAP	% Remaining
03-04-08-09	13.00	0.97	36.08	38.38	16.37	70.80	52.82
03-04-08-10	27.30	0.89	39.44	41.72	33.28	64.60	57.41
03-04-08-11	i						60.73
03-04-09-10	12.00	0.98	36.70	37.55	15.10	71.08	51.68
03-04-09-11	i						58.84
03-04-10-11	20.90	0.93	31.31	44.83	25.91	67.89	61.69
03-05-06-07	17.70	0.95	39.91	36.72	22.12	69.22	50.53
03-05-06-08	27.40	0.89	38.33	42.47	33.43	64.52	58.45
03-05-06-09	23.00	0.92	37.88	40.60	28.41	66.88	55.87
03-05-06-10	33.10	0.84	41.52	44.17	39.72	60.85	60.79
03-05-06-11	26.00	0.90	31.40	46.53	31.85	65.32	64.03
03-05-07-08	11.00	0.98	37.78	36.30	13.84	71.34	49.95
03-05-07-09	i						46.61
03-05-07-10	18.80	0.95	39.96	37.14	23.40	68.80	51.10
03-05-07-11	i						56.36
03-05-08-09	16.20	0.96	35.34	39.97	20.27	69.78	55.00
03-05-08-10	29.40	0.87	38.86	43.27	35.71	63.29	59.54
03-05-08-11	16.60	0.96	28.48	46.10	20.76	69.64	63.44
03-05-09-10	12.70	0.98	35.55	38.78	15.93	70.90	53.36
03-05-09-11	i						61.05
03-05-10-11	24.60	0.91	30.83	46.44	30.24	66.08	63.91
03-06-07-08	27.30	0.89	38.11	42.58	33.37	64.55	58.59
03-06-07-09	23.70	0.92	37.89	40.92	29.22	66.53	56.31
03-06-07-10	33.40	0.84	41.44	44.38	40.01	60.66	61.08
03-06-07-11	24.30	0.91	30.78	46.39	29.95	66.21	63.84
03-06-08-09	33.00	0.84	36.63	46.48	39.63	60.91	63.96
03-06-08-10	41.40	0.75	40.82	49.99	48.08	54.49	68.79
03-06-08-11	34.40	0.83	29.17	51.33	41.10	59.93	70.64
03-06-09-10	34.40	0.83	38.10	46.50	41.04	59.97	63.99
03-06-09-11	31.20	0.86	29.12	50.10	37.68	62.14	68.94
03-06-10-11	41.20	0.75	32.96	52.56	47.86	54.68	72.33
03-07-08-09	20.50	0.94	36.05	40.90	25.45	68.06	56.29
03-07-08-10	31.30	0.85	39.41	44.05	37.77	62.08	60.62
03-07-08-11	19.00	0.95	28.68	46.50	23.64	68.72	63.98
03-07-09-10	18.50	0.95	36.38	39.87	23.04	68.92	54.86
03-07-09-11	9.70	0.99	28.36	44.97	12.23	71.63	61.88
03-07-10-11	26.70	0.89	31.17	46.94	32.60	64.95	64.59
03-08-09-10	31.00	0.86	35.60	45.96	37.41	62.30	63.25
03-08-09-11	25.20	0.90	26.50	50.00	30.99	65.73	68.80
03-08-10-11	37.80	0.79	30.21	52.19	44.53	57.42	71.82
03-09-10-11	20.60	0.94	26.39	48.85	25.53	68.04	67.22
04-05-06-07	15.50	0.96	39.12	36.51	19.44	70.02	50.24
04-05-06-08	27.50	0.89	38.00	42.73	33.56	64.46	58.81
04-05-06-09	23.80	0.92	37.75	41.06	29.31	66.49	56.50
04-05-06-10	33.80	0.83	41.45	44.64	40.42	60.39	61.42
04-05-06-11	22.20	0.93	30.14	46.20	27.51	67.26	63.58

Message Solutions (continued)

Message	θ	r	ST-R	TG-R	TG-CAP	ST-CAP	% Remaining
04-05-07-08	15.60	0.96	38.18	37.35	19.58	69.98	51.40
04-05-07-09	4.80	1.00	37.73	35.21	6.07	72.41	48.45
04-05-07-10	22.40	0.93	40.57	38.41	27.69	67.19	52.86
04-05-07-11	i						56.78
04-05-08-09	22.90	0.92	36.49	41.56	28.30	66.93	57.19
04-05-08-10	33.00	0.84	39.96	44.79	39.56	60.95	61.64
04-05-08-11	20.30	0.94	28.75	46.77	25.18	68.16	64.37
04-05-09-10	21.60	0.93	36.95	40.65	26.74	67.57	55.94
04-05-09-11	11.70	0.98	28.39	45.23	14.70	71.16	62.24
04-05-10-11	28.00	0.88	31.38	47.31	34.11	64.17	65.10
04-06-07-08	29.00	0.87	38.35	43.34	35.28	63.53	59.65
04-06-07-09	26.30	0.90	38.33	41.90	32.19	65.15	57.65
04-06-07-10	35.10	0.82	41.89	45.33	41.79	59.45	62.38
04-06-07-11	23.50	0.92	30.23	46.53	28.98	66.64	64.04
04-06-08-09	36.10	0.81	37.59	47.74	42.80	58.72	65.69
04-06-08-10	43.50	0.73	41.73	51.20	50.00	52.73	70.46
04-06-08-11	35.70	0.81	29.24	51.83	42.45	58.98	71.33
04-06-09-10	37.60	0.79	39.27	47.96	44.32	57.59	65.99
04-06-09-11	33.40	0.84	29.44	50.76	40.03	60.65	69.85
04-06-10-11	42.70	0.74	33.30	53.22	49.28	53.41	73.24
04-07-08-09	27.70	0.89	37.76	42.97	33.76	64.35	59.14
04-07-08-10	35.60	0.81	41.03	46.02	42.35	59.05	63.33
04-07-08-11	25.50	0.90	29.69	47.63	31.31	65.58	65.54
04-07-09-10	26.90	0.89	38.33	42.21	32.88	64.81	58.09
04-07-09-11	21.20	0.93	29.64	46.30	26.28	67.75	63.71
04-07-10-11	31.80	0.85	32.40	48.25	38.30	61.76	66.40
04-08-09-10	37.50	0.79	38.08	48.40	44.29	57.61	66.61
04-08-09-11	34.00	0.83	28.53	51.56	40.68	60.22	70.96
04-08-10-11	42.80	0.73	32.07	53.73	49.33	53.36	73.94
04-09-10-11	32.00	0.85	28.76	50.64	38.53	61.61	69.68
05-06-07-08	32.20	0.85	38.20	45.21	38.76	61.47	62.21
05-06-07-09	28.40	0.88	37.68	43.39	34.54	63.94	59.71
05-06-07-10	37.00	0.80	41.38	46.79	43.73	58.04	64.39
05-06-07-11	29.00	0.88	30.29	48.44	35.18	63.59	66.65
05-06-08-09	38.30	0.79	37.16	49.23	45.04	57.03	67.74
05-06-08-10	45.50	0.70	41.44	52.66	51.79	50.97	72.47
05-06-08-11	40.50	0.76	29.60	53.71	47.18	55.27	73.91
05-06-09-10	39.00	0.78	38.46	49.13	45.71	56.49	67.61
05-06-09-11	36.80	0.80	29.15	52.31	43.50	58.21	71.99
05-06-10-11	45.50	0.70	33.16	54.78	51.81	50.96	75.38
05-07-08-09	28.00	0.88	36.47	43.91	34.06	64.19	60.43
05-07-08-10	36.50	0.80	39.94	46.98	43.19	58.44	64.65
05-07-08-11	28.00	0.88	28.98	49.03	34.17	64.14	67.46
05-07-09-10	25.90	0.90	36.65	42.82	31.77	65.35	58.92
05-07-09-11	20.80	0.94	28.26	47.34	25.84	67.92	65.14
05-07-10-11	32.70	0.84	31.26	49.33	39.23	61.17	67.88

Message	θ	r	ST-R	TG-R	TG-CAP	ST-CAP	% Remaining
05-08-09-10	37.70	0.79	36.63	49.11	44.47	57.47	67.58
05-08-09-11	35.10	0.82	27.42	52.66	41.82	59.43	72.47
05-08-10-11	44.30	0.72	31.20	54.86	50.76	52.00	75.49
05-09-10-11	31.30	0.86	27.10	51.46	37.72	62.11	70.82
06-07-08-09	39.50	0.77	37.56	49.79	46.22	56.08	68.51
06-07-08-10	46.20	0.69	41.71	53.12	52.41	50.33	73.10
06-07-08-11	40.70	0.76	29.45	53.86	47.35	55.13	74.12
06-07-09-10	40.30	0.76	38.98	49.79	47.00	55.42	68.52
06-07-09-11	37.70	0.79	29.29	52.63	44.44	57.50	72.43
06-07-10-11	45.90	0.70	33.18	55.02	52.20	50.56	75.71
06-08-09-10	49.20	0.65	39.42	55.62	55.04	47.45	76.54
06-08-09-11	48.80	0.66	29.10	57.78	54.64	47.91	79.52
06-08-10-11	55.40	0.57	33.66	60.32	59.84	41.22	83.01
06-09-10-11	49.10	0.66	30.42	57.53	54.90	47.61	79.17
07-08-09-10	40.40	0.76	37.84	50.27	47.13	55.31	69.17
07-08-09-11	38.60	0.78	28.45	53.45	45.30	56.82	73.55
07-08-10-11	46.20	0.69	32.01	55.55	52.45	50.30	76.44
07-09-10-11	35.70	0.81	28.33	52.36	42.45	58.98	72.05
08-09-10-11	48.70	0.66	28.79	57.86	54.59	47.97	79.62

Note. ST-R: distance between start concept location and resultant location; TG-R: distance between target location and resultant location; TG-CAP: distance between target location and its orthogonal projection on resultant vector; and ST-CAP: distance between start concept location and the orthogonal projection of target concept on resultant vector.

TOP 10 BEST MESSAGE STRATEGIES

Rank	Concepts	% Remaining	Distance Remaining
1	EDUCATION HEALTH HUMAN RIGHTS	19.82	14.41
2	EDUCATION HEALTH	19.93	14.49
3	EDUCATION HEALTH HUMAN RIGHTS HUMAN RESOURCES	26.27	19.09
4	EDUCATION HUMAN RIGHTS	26.5	19.26
5	EDUCATION HEALTH HUMAN RIGHTS SOCIAL SAFETY	27.87	20.25
6	EDUCATION HEALTH HUMAN RESOURCES	29.52	21.45
7	EDUCATION HEALTH SOCIAL SAFETY	29.7	21.58
8	EDUCATION HUMAN RIGHTS HUMAN RESOURCES	30.8	22.38
9	HEALTH HUMAN RIGHTS	31.21	22.68
10	EDUCATION	31.93	23.2

Appendix E. Message

INTERNATIONAL AID is closely related to EDUCATION, HEALTH, and HUMAN RIGHTS. International aid promotes human rights for everyone throughout the world by providing health care and education. We want you to pledge your support. Join the growing global movement for international aid. Your support will help to achieve an increase in international aid, promoting human rights to health care and education for everyone in the world.

Part I. Galileo Survey

Instruction: You will find a list of paired words or phrases. Please tell how different or how "far apart" each word or phrase is from the other in the pair. The MORE DIFFERENT they are the LARGER number you should enter. If there is NO DIFFERENCE between them, enter 0. To help you know what size number to write, think about this phrase:

COOPERATION and CONFLICT are 100 units apart.

- If any two concepts seem twice as different as COOPERATION and CONFLICT, you might enter 200.
- If they are only half as different, you might write 50.
- There is no limit to the size of the number you may enter.
- If you don't know an answer, just leave it blank.

1. POVERTY and EDUCATION are _____ units apart.
2. POVERTY and HEALTH are _____ units apart.
3. POVERTY and HUMAN RIGHTS are _____ units apart.
4. POVERTY and HUMAN RESOURCES are _____ units apart.
5. POVERTY and NATURAL RESOURCES are _____ units apart.
6. POVERTY and SOCIAL SAFETY are _____ units apart.
7. POVERTY and GOVERNMENTAL LEADERSHIP are _____ units apart.
8. POVERTY and GLOBAL COOPERATION are _____ units apart.
9. POVERTY and GLOBAL CONFLICT are _____ units apart.
10. POVERTY and INTERNATIONAL AID are _____ units apart.
11. POVERTY and MYSELF are _____ units apart.
12. EDUCATION and HEALTH are _____ units apart.
13. EDUCATION and HUMAN RIGHTS are _____ units apart.
14. EDUCATION and HUMAN RESOURCES are _____ units apart.
15. EDUCATION and NATURAL RESOURCES are _____ units apart.
16. EDUCATION and SOCIAL SAFETY are _____ units apart.
17. EDUCATION and GOVERNMENTAL LEADERSHIP are _____ units apart.
18. EDUCATION and GLOBAL COOPERATION are _____ units apart.
19. EDUCATION and GLOBAL CONFLICT are _____ units apart.
20. EDUCATION and INTERNATIONAL AID are _____ units apart.
21. EDUCATION and MYSELF are _____ units apart.
22. HEALTH and HUMAN RIGHTS are _____ units apart.
23. HEALTH and HUMAN RESOURCES are _____ units apart.
24. HEALTH and NATURAL RESOURCES are _____ units apart.
25. HEALTH and SOCIAL SAFETY are _____ units apart.
26. HEALTH and GOVERNMENTAL LEADERSHIP are _____ units apart.
27. HEALTH and GLOBAL COOPERATION are _____ units apart.

28. HEALTH and GLOBAL CONFLICT are _____ units apart.
29. HEALTH and INTERNATIONAL AID are _____ units apart.
30. HEALTH and MYSELF are _____ units apart.
31. HUMAN RIGHTS and HUMAN RESOURCES are _____ units apart.
32. HUMAN RIGHTS and NATURAL RESOURCES are _____ units apart.
33. HUMAN RIGHTS and SOCIAL SAFETY are _____ units apart.
34. HUMAN RIGHTS and GOVERNMENTAL LEADERSHIP are _____ units apart.
35. HUMAN RIGHTS and GLOBAL COOPERATION are _____ units apart.
36. HUMAN RIGHTS and GLOBAL CONFLICT are _____ units apart.
37. HUMAN RIGHTS and INTERNATIONAL AID are _____ units apart.
38. HUMAN RIGHTS and MYSELF are _____ units apart.
39. HUMAN RESOURCES and NATURAL RESOURCES are _____ units apart.
40. HUMAN RESOURCES and SOCIAL SAFETY are _____ units apart.
41. HUMAN RESOURCES and GOVERNMENTAL LEADERSHIP are _____ units apart.
42. HUMAN RESOURCES and GLOBAL COOPERATION are _____ units apart.
43. HUMAN RESOURCES and GLOBAL CONFLICT are _____ units apart.
44. HUMAN RESOURCES and INTERNATIONAL AID are _____ units apart.
45. HUMAN RESOURCES and MYSELF are _____ units apart.
46. NATURAL RESOURCES and SOCIAL SAFETY are _____ units apart.
47. NATURAL RESOURCES and GOVERNMENTAL LEADERSHIP are _____ units apart.
48. NATURAL RESOURCES and GLOBAL COOPERATION are _____ units apart.
49. NATURAL RESOURCES and GLOBAL CONFLICT are _____ units apart.
50. NATURAL RESOURCES and INTERNATIONAL AID are _____ units apart.
51. NATURAL RESOURCES and MYSELF are _____ units apart.
52. SOCIAL SAFETY and GOVERNMENTAL LEADERSHIP are _____ units apart.
53. SOCIAL SAFETY and GLOBAL COOPERATION are _____ units apart.
54. SOCIAL SAFETY and GLOBAL CONFLICT are _____ units apart.
55. SOCIAL SAFETY and INTERNATIONAL AID are _____ units apart.
56. SOCIAL SAFETY and MYSELF are _____ units apart.
57. GOVERNMENTAL LEADERSHIP and GLOBAL COOPERATION are _____ units apart.
58. GOVERNMENTAL LEADERSHIP and GLOBAL CONFLICT are _____ units apart.
59. GOVERNMENTAL LEADERSHIP and INTERNATIONAL AID are _____ units apart.
60. GOVERNMENTAL LEADERSHIP and MYSELF are _____ units apart.
61. GLOBAL COOPERATION and GLOBAL CONFLICT are _____ units apart.
62. GLOBAL COOPERATION and INTERNATIONAL AID are _____ units apart.
63. GLOBAL COOPERATION and MYSELF are _____ units apart.
64. GLOBAL CONFLICT and INTERNATIONAL AID are _____ units apart.
65. GLOBAL CONFLICT and MYSELF are _____ units apart.
66. INTERNATIONAL AID and MYSELF are _____ units apart.

Part II. Opinion Questions

Instruction (1-17): We are interested in your opinion about the following statements using the scale below:

0........................50..........................**100**.........................200..........................?

| **Do not** | Half the | **Average** | Twice the | As high as |
| **agree** | average | | average | you want |

You should write in a number from zero to as large a number as you wish on the blank to indicate how much you agree with a statement. On the scale, a score of **"0"** indicates that you **DO NOT AGREE** with the statement. A score of **"100"** indicates an **AVERAGE** level of agreement. In addition, a score of "200" indicates twice the average level of agreement, and that a score of "50" means half as much agreement. There is no limit to the size of the number you may enter. If you don't know an answer, just leave it blank.

1. I intend to participate in an international aid program. _____
2. At some time in the future, I plan to join in an international aid program. _____
3. I have considered the possibility of becoming a donor of international aid. _____
4. Joining in an international aid program is beneficial. _____
5. Joining in an international aid program is good. _____
6. Joining in an international aid program is valuable. _____
7. Most people who are important to me think that I should participate in an international aid program. _____
8. Most people who are important to me join in an international aid program. _____
9. Many people like me join in an international aid program. _____

Part III. Demographic Questions

1. Please indicate your citizenship: _____

2. Please indicate your age: _____

3. Please indicate your gender:
   ___1. Male
   ___2. Female

4. Please indicate you ethnicity:
   ___1. African American/Black
   ___2. Asian/Asian American/Pacific Islander
   ___3. Caucasian
   ___4. Latino/Hispanic
   ___5. Multiracial
   ___6. Native American/American Indian
   ___7. Other

Thank you for your participation.

Part I. Galileo Survey

Instruction: You will find a list of paired words or phrases. Please tell how different or how "far apart" each word or phrase is from the other in the pair. The MORE DIFFERENT they are the LARGER number you should enter. If there is NO DIFFERENCE between them, enter 0. To help you know what size number to write, think about this phrase:

COOPERATION and CONFLICT are 100 units apart.

- If any two concepts seem twice as different as COOPERATION and CONFLICT, you might enter 200.
- If they are only half as different, you might write 50.
- There is no limit to the size of the number you may enter.
- If you don't know an answer, just leave it blank.

For your questions, please notice the following:
INTERNATIONAL AID is closely related to EDUCATION, HEALTH, and HUMAN RIGHTS.

1. POVERTY and EDUCATION are _____ units apart.
2. POVERTY and HEALTH are _____ units apart.
3. POVERTY and HUMAN RIGHTS are _____ units apart.
4. POVERTY and HUMAN RESOURCES are _____ units apart.
5. POVERTY and NATURAL RESOURCES are _____ units apart.
6. POVERTY and SOCIAL SAFETY are _____ units apart.
7. POVERTY and GOVERNMENTAL LEADERSHIP are _____ units apart.
8. POVERTY and GLOBAL COOPERATION are _____ units apart.
9. POVERTY and GLOBAL CONFLICT are _____ units apart.
10. POVERTY and INTERNATIONAL AID are _____ units apart.
11. POVERTY and MYSELF are _____ units apart.
12. EDUCATION and HEALTH are _____ units apart.
13. EDUCATION and HUMAN RIGHTS are _____ units apart.
14. EDUCATION and HUMAN RESOURCES are _____ units apart.
15. EDUCATION and NATURAL RESOURCES are _____ units apart.
16. EDUCATION and SOCIAL SAFETY are _____ units apart.
17. EDUCATION and GOVERNMENTAL LEADERSHIP are _____ units apart.
18. EDUCATION and GLOBAL COOPERATION are _____ units apart.
19. EDUCATION and GLOBAL CONFLICT are _____ units apart.
20. EDUCATION and INTERNATIONAL AID are _____ units apart.
21. EDUCATION and MYSELF are _____ units apart.
22. HEALTH and HUMAN RIGHTS are _____ units apart.
23. HEALTH and HUMAN RESOURCES are _____ units apart.
24. HEALTH and NATURAL RESOURCES are _____ units apart.

25. HEALTH and SOCIAL SAFETY are _____ units apart.
26. HEALTH and GOVERNMENTAL LEADERSHIP are _____ units apart.
27. HEALTH and GLOBAL COOPERATION are _____ units apart.
28. HEALTH and GLOBAL CONFLICT are _____ units apart.
29. HEALTH and INTERNATIONAL AID are _____ units apart.
30. HEALTH and MYSELF are _____ units apart.
31. HUMAN RIGHTS and HUMAN RESOURCES are _____ units apart.
32. HUMAN RIGHTS and NATURAL RESOURCES are _____ units apart.
33. HUMAN RIGHTS and SOCIAL SAFETY are _____ units apart.
34. HUMAN RIGHTS and GOVERNMENTAL LEADERSHIP are _____ units apart.
35. HUMAN RIGHTS and GLOBAL COOPERATION are _____ units apart.
36. HUMAN RIGHTS and GLOBAL CONFLICT are _____ units apart.
37. HUMAN RIGHTS and INTERNATIONAL AID are _____ units apart.
38. HUMAN RIGHTS and MYSELF are _____ units apart.
39. HUMAN RESOURCES and NATURAL RESOURCES are _____ units apart.
40. HUMAN RESOURCES and SOCIAL SAFETY are _____ units apart.
41. HUMAN RESOURCES and GOVERNMENTAL LEADERSHIP are _____ units apart.
42. HUMAN RESOURCES and GLOBAL COOPERATION are _____ units apart.
43. HUMAN RESOURCES and GLOBAL CONFLICT are _____ units apart.
44. HUMAN RESOURCES and INTERNATIONAL AID are _____ units apart.
45. HUMAN RESOURCES and MYSELF are _____ units apart.
46. NATURAL RESOURCES and SOCIAL SAFETY are _____ units apart.
47. NATURAL RESOURCES and GOVERNMENTAL LEADERSHIP are _____ units apart.
48. NATURAL RESOURCES and GLOBAL COOPERATION are _____ units apart.
49. NATURAL RESOURCES and GLOBAL CONFLICT are _____ units apart.
50. NATURAL RESOURCES and INTERNATIONAL AID are _____ units apart.
51. NATURAL RESOURCES and MYSELF are _____ units apart.
52. SOCIAL SAFETY and GOVERNMENTAL LEADERSHIP are _____ units apart.
53. SOCIAL SAFETY and GLOBAL COOPERATION are _____ units apart.
54. SOCIAL SAFETY and GLOBAL CONFLICT are _____ units apart.
55. SOCIAL SAFETY and INTERNATIONAL AID are _____ units apart.
56. SOCIAL SAFETY and MYSELF are _____ units apart.
57. GOVERNMENTAL LEADERSHIP and GLOBAL COOPERATION are _____ units apart.
58. GOVERNMENTAL LEADERSHIP and GLOBAL CONFLICT are _____ units apart.
59. GOVERNMENTAL LEADERSHIP and INTERNATIONAL AID are _____ units apart.
60. GOVERNMENTAL LEADERSHIP and MYSELF are _____ units apart.
61. GLOBAL COOPERATION and GLOBAL CONFLICT are _____ units apart.
62. GLOBAL COOPERATION and INTERNATIONAL AID are _____ units apart.
63. GLOBAL COOPERATION and MYSELF are _____ units apart.
64. GLOBAL CONFLICT and INTERNATIONAL AID are _____ units apart.
65. GLOBAL CONFLICT and MYSELF are _____ units apart.
66. INTERNATIONAL AID and MYSELF are _____ units apart.

Part II. Opinion Questions

Instruction (1-9): We are interested in your opinion about the following statements using the scale below:

0.........................50..........................**100**.........................200..........................?

| **Do not agree** | Half the average | **Average** | Twice the average | As high as you want |

You should write in a number from zero to as large a number as you wish on the blank to indicate how much you agree with a statement. On the scale, a score of **"0"** indicates that you **DO NOT AGREE** with the statement. A score of **"100"** indicates an **AVERAGE** level of agreement. In addition, a score of "200" indicates twice the average level of agreement, and that a score of "50" means half as much agreement. There is no limit to the size of the number you may enter. If you don't know an answer, just leave it blank.

1. I intend to participate in an international aid program. _____
2. At some time in the future, I plan to join in an international aid program. _____
3. I have considered the possibility of becoming a donor of international aid. _____
4. Joining in an international aid program is beneficial. _____
5. Joining in an international aid program is good. _____
6. Joining in an international aid program is valuable. _____
7. Most people who are important to me think that I should participate in an international aid program. _____
8. Most people who are important to me join in an international aid program. _____
9. Many people like me join in an international aid program. _____

Part III. Demographic Questions

1. Please indicate your citizenship: _____

2. Please indicate your age: _____

3. Please indicate your gender:
   ___1. Male
   ___2. Female

4. Please indicate you ethnicity:
   ___1. African American/Black
   ___2. Asian/Asian American/Pacific Islander
   ___3. Caucasian
   ___4. Latino/Hispanic
   ___5. Multiracial
   ___6. Native American/American Indian
   ___7. Other

Thank you for your participation.

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