How to Win a World Election: Emergent Leadership in an International Online Community

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Introduction

In light of the recent U.S. presidential election, our attention is once again focused on the characteristics that determine perceptions of leadership and the factors that determine elections. It appears that style, appearance and language are at least as important as the issues and beliefs of the candidates. With television, for instance, discourse may largely

be conducted through visual imagery (Postman 1985), in which physical appearance and nonverbal behaviors magnify the political platform of the respective parties. In fact, for presidential candidates, happy/reassuring facial displays during television interviews elicit more change in the electorate's attitudes than party identification, position on campaign issues or assessment of leadership capability (Sullivan and Masters 1988). Similarly, an experimental study of women's images shows that the manipulation of attractiveness in photographs on campaign flyers affect election results (Rosenberg, Kahn et al. 1991).

In the early days of the Internet, much was made of the fact that superficial characteristics such as height and weight would not – could not – play a role in interpersonal relationships. As our experiences with the online world have increased, it has become clear that some of these characteristics are not in fact skin-deep. Communication online is as gendered as it is in the real-world. And power is reproduced faithfully, even when physical strength is irrelevant. Little research, however, has returned to an examination of the correlation between individual traits and leadership, in contexts where sight and sound do not play a role.

What happens, then, when elections take place online, in an environment where we can no longer see the physical appearance or nonverbal behavior of the candidates? Does language become the predominant factor in perceiving leadership? If discourse is all that is left to judge the potential leaders of a virtual group, what linguistic characteristics serve as criteria for electing a leader? In order to address these questions, we examine data from the JUNIOR SUMMIT, an online community composed of 3000 children from 139 different countries who had to choose 100 delegates to attend a highly coveted week-long symposium in the U.S.

Without ever seeing each other face-to-face, and in a community almost entirely free of adult intervention, these children traded messages in an online forum about how technology could improve life for young people around the world. They then elected leaders to represent their community in a real-world meeting with political and industry leaders from around the world (Cassell 2002). From the children's messages to one another in the months leading up to the election, we are able to examine the linguistic cues and language use that predict who emerged as a leader in the group and how leaders were perceived by the group.

The **JUNIOR SUMMIT**

The JUNIOR SUMMIT's goal was to connect and empower motivated youth from around the world to make their voices heard. Eighty-thousand calls for participation, translated into 16 languages, were sent out worldwide with the goal of attracting participants with a passion for changing the world. Ultimately, the hosting institution, the Massachusetts Institute of Technology (MIT), received over 8000 applications in 30 languages, and from a broad variety of urban and rural contexts, high- and low-socio-economic strata. Ultimately 3062 young people from 139 different countries were accepted – some participated as individuals and some in groups or school classes such that there were

1000 log-ins. Computers and internet connections were given to those participants who needed them. The forum was neatly divided between girls (55%) and boys (45%), and the ages of participants ranged from 10 to 16.

Latin America & Caribbean	Argentina	21		**Europe**	Croatia	11
	Bolivia	9			France	27
	Brazil	38			Greece	32
	Colombia	23			Lithuania	9
	Costa Rica	17			Romania	11
	Honduras	10			Ukraine	6
	Jamaica	20			United Kingdom	14
	Mexico	15				
	Uruguay	19		**South Asia**	Bangladesh	8
					India	19
North America	Canada	36			Indonesia	5
	United States	67			Malaysia	6
					Nepal	8
Africa	Cameroon	10			Pakistan	20
	Kenya	10			Philippines	6
	Namibia	9			Thailand	15
	Senegal	12				
	South Africa	30		**Pacific Islands**	Australia	22
	Uganda	8			New Zealand	17
	Zimbabwe	9				
				East Asia	China	58
Middle East	Israel	10			Hong Kong	8
	Lebanon	23			Singapore	14
	Morocco	2			South Korea	8
	United Arab Emirates	17			Taiwan	13

Table 1. The JUNIOR SUMMIT participants: Countries and number of children.

Timeline

The main activities of the JUNIOR SUMMIT took place over a 3-month period: one month in homerooms, two months in topic groups. During the topic groups, the participants elected two delegates per group to attend an in-person summit in Boston where they presented the ideas of the group to world leaders and the international press. At no point was more than one adult participating in each online group, and those adult moderators were trained to keep their participation to the minimum. Some of the participants dropped out after two months when they discovered that they had not been elected as

delegates, and some dropped out after three months, after the in-person summit in Boston. Many, however, stayed on for an additional 9 months, and some are still participating – for example, writing an online newspaper that has survived for 6 years (Cassell 2002).

It is the email messages sent to the forum prior to announcements of the election results that is the focus of this article. These messages, numbering almost twenty thousand, allow us to explore the various linguistic strategies, conscious or not, that participants used to express themselves and win influence among their peers.

Literature Review

Early claims about the Internet promised a power-leveling democratic environment that would be blind to race, gender and physical traits. Yet research on computer-mediated communication (CMC) demonstrates that gender- and status-based power relationships have been reproduced in online environments, either by choice or by socialization (Herring 1993). In short, gender and nationality are not necessarily invisible online (Herring 1993). In what follows, we examine the relationships between gender, power, leadership and language use before turning to the scant literature on leadership online.

Leadership involves the ability to influence individuals to adopt collective or group goals over personal ones—in essence, leadership involves persuasion rather than domination (Hogan, Curphy et al. 1994). Many studies suggest that men tend to be perceived and elected as leaders more often than women (Bass 1990). In terms of their leadership language style, men are generally considered to use more authoritative or assertive speech, while women are considered to use a more personal and facilitative style (Bass 1990). Interestingly, studies show that language that fuses both styles, assertive and supportive, has the most influence in group management (Bass 1990).

Language is social action; and language can be used to assert power over the listener (Holtgraves 2002). For example, even the simplest speech act, such as saying hello to a passerby, can be an act of power or dominance over a listener, as it requires of that passerby to acknowledge the speaker (Hart 1987). Expressing an opinion, teaching or preaching are also powerful uses of language, especially in comparison to asking for advice or asking for directions (Hart 1987). A distinction between powerful and powerless language remains an important consideration in social interaction, especially the effects of powerful or powerless language as a persuasive device.

Features of language that have been described as powerless include *hesitations* such as "umm," *hedge* phrases such as "I kinda feel," or *tag questions* such as "…right?" (Lakoff 1975, 2004 2004; Gibbons, Bush et al. 1991; Holtgraves and Lasky 1999). Speakers who use this kind of language are often perceived as less assertive, credible or even competent than people who use more powerful speech (Holtgraves and Lasky 1999). Speakers who use these tentative linguistic devices are also perceived less favorably than powerful speakers (Holtgraves and Lasky 1999), producing negative perceptions of a speaker's sociability and competence (Gibbons, Bush et al. 1991). While early interpretations of

these results focused on the tentativeness and uncertainty of the speaker, more recent work has demonstrated that this kind of "powerless" language may in fact be used to exhibit respect to the listener, rather than deference (Eckert and McConnell-Ginet 2003).

For example, research has found that women were considered more persuasive than men when using a "powerless" style (Carli 1990). Speakers independently judged as 'powerful' talk more, but also use language that involves direct and specific features, as well interrogation or injection rather than hedges or indirection. (Brownlow, Rosamond et al. 2003). Bass (1990) characterized men's language in organizational settings as competitive and aggressive, using interjections, slang or informal speech, and third person reference. By contrast, the language of women in these settings is characterized by passive agreement, tag questions, intensifiers and the relating of personal experiences (Bass 1990). Research shows that, despite stereotypes about gossiping, men actually talk more than women, especially in institutional settings, and what they say is often better received in these settings (Eckert and McConnell-Ginet 2003). And, *contra* myths of women's self-effacing language, Pennebaker (2003) and his colleagues find that women use more first person singular pronouns in both spontaneous speech and writing (Pennebaker, Mehl et al. 2003).

Emergent leadership involves the study of perceptions of leadership among otherwise leaderless groups (Hogan, Curphy et al. 1994), an area of special interest within the study of online communities, where leaders may emerge through their language or behavior. A very early study in emergent leadership found that sociability, responsibility, confidence, cooperation but also dominance were factors in how leaders were perceived in a group (Hogan, Curphy et al. 1994). Similarly, a more recent study suggests that the ability to recognize different cultural values, performance, trust, and communication ability explain how leaders emerge during the initial stages of a project (Sarker, Grewel et al. 2002). Interestingly Bass (1990) found that authoritarian-style personalities aren't likely to emerge as leaders in a leaderless group.

Other studies have continued to adduce evidence for what is sometimes called the "babble theory hypothesis" (Sarker, Grewel et al. 2002); that is, the sheer *amount* of communication can predict leadership in an online community. Misiolek & Heckman (2005), for instance, find that leaders in virtual teams initiated communication more often than non-leaders, and received more responses from other group members. Furthermore, perceived leaders play a more active part in initiating tasks and processes (Misiolek and Heckman 2005). Similarly, Yoo & Alavi (2002, 2004) find that emergent leaders sent more emails, longer emails, and more task-oriented emails than other members. Interestingly, demographic factors such as age or experience did not affect emergent leadership (Yoo and Alavi 2002; Yoo and Alavi 2004).

In sum, while gender differences may exist in language use or communicative styles, these differences do not determine leadership skills. For instance, a fusion of both assertive and supportive language may have the strongest influence on a group (Bass 1990). Furthermore, leadership can be defined as an ability to persuade a group (Hogan, Curphy et al. 1994), yet both powerful and powerless speech impact persuasiveness. While Hart (1997) is convinced that dominant language can provide the winning ticket in

an election, other factors such as personality, cognitive ability, cooperation and sociability may have as strong an impact on perceptions of leadership (Hogan, Curphy et al. 1994).

Finally, predictors of emergent leadership in online communities vary. While some scholars claim that sociability, achievement, responsibility, cultural values, performance and trust are indicative of perceived and elected leaders online (Bass 1990; Sarker, Grewel et al. 2002), others have found the mere amount of communication, in terms of messages and message lengths, to be the most powerful factor (Yoo and Alavi 2002; Yoo and Alavi 2004; Misiolek and Heckman 2005).

The Present Studies

This chapter examines the discursive and linguistic features of an online community in order to find predictors of leadership online. In particular, we investigate the use of talk about the self and talk about others, informative and interactional talk, powerful and powerless language (such as the use of hedges or tag questions), as well as the amount of communication that took place. We pursue this investigation through data from the online interactions of JUNIOR SUMMIT participants during the first six weeks of a two-month period, which culminated with an online election. Based on the study of this multinational, online democracy of young people, we pose the following questions:

Do children who were elected present themselves differently than those who were not? Can we predict who was elected by looking at children's online conversation? In the absence of access to face-to-face cues, what characteristics of language correlate with leadership positions? Are the online voices of boys and girls distinguishable? Do they follow the gender lines suggested by literature on men and women's communicative styles? Are girls and boys elected for the same criteria?

Given that assertive speech styles lead listeners both to like speakers and to accept their arguments, we can hypothesize that those elected to attend the in-person Summit employed powerful language in their email messages. In general, it would be easy to hypothesize that those who were elected to the in-person conference would speak with certainty, avoiding tentative language and hedges. We might also guess that they would issue directives with greater frequency and post longer messages and more messages than their peers who were not elected.

As for content, it seems likely that delegates would offer more ideas to the forum than the average participant. Given the low-context nature of computer-mediated communication and the fact that candidates must be known by their constituents, we can hypothesize that elected delegates may have provided relatively more biographic information and personal narratives about themselves than their peers.

Finally, we would expect girls to use different language than boys online, along the lines of the literature reviewed, such that girls would write less, but use more hedges and more personal pronouns. And, we would expect fewer girls than boys to be elected leaders, since gender has been found to mitigate perceived leadership potential.

Method

The data sets that comprise the JUNIOR SUMMIT are of three types: (1) the 48,000 messages posted to the online forum for the period September 1998-September 2003; (2) in-depth interviews about the effects of the JUNIOR SUMMIT conducted with 78 participants from 20 countries 5 years after the Summit began; (3) questionnaires on socio-psychological variables (primarily self-efficacy, meaningful instrumental activity, social networks) filled out by the same subset of 78 of the children 5 years after the summit began. In this chapter, we discuss results from analyses carried out on a subset of this huge data set. We present our data as two separate studies of the Junior Summit. In the first study, we analyze word frequencies for one sample of participants (n = 274), who posted 7755 messages in the first 6 weeks of the JUNIOR SUMMIT. In the second study, we examine in greater detail, using both word frequencies and hand-coding of content, 2369 messages posted by a second sample of Summit participants (n = 33) during the same six-week period.

The subjects whose messages are analyzed in these studies represent a subset of the entire JUNIOR SUMMIT population; in particular, we only examine messages posted by children who participated independently (as opposed to as a part of a team or group of children) and who chose English as the language which they would use during the Junior Summit (although by no means were all of these children native English speakers).

Study 1

Participants

The first study includes data from 274 participants (54% female, 46% male) between the ages of 9 and 16 (mean age = 13.83, sd = 1.77), representing 84 countries. Again, this set of participants represents children who participated as individuals (not groups), and who chose English as their language of participation.

Procedure

For the first study, we examined the total number of words, total number of messages, and average message length for each participant, as well as a word frequency analysis. As discussed by Pennebaker, Mehl & Niederhoffer, (2003), word frequency can be a powerful tool in understanding the psychological and sociological profiles of individuals and communities. We employed a computational word frequency analysis software package, *Linguistic Inquiry Word Count* (LIWC) (Pennebaker, Mehl & Niederhoffer 2003), to analyze a number of categories including first person singular and plural pronouns, negations, assent, positive emotion, family, reference to the future tense. We also added some categories of our own (such as hedges, "WH" questions, apologies and JUNIOR SUMMIT-related language). A complete description of LIWC's functionality, dictionaries and external validity are available at http://homepage.psy.utexas.edu/homepage/faculty/Pennebaker/Reprints/LIWC2001.pdf.

We took several steps to prepare the data. To adhere to the assumptions for our statistical analysis (i.e., a normal distribution of data that is representative of our population), we removed outliers and standardized our data using z-scores.

Because subjects wrote messages of various lengths, we converted the word counts to percentages, by dividing each word count by the number of total words written by each participant. Participants who wrote *longer messages*, might have *more instances* of each word, which would skew the results, and this conversion ensures that we avoid such erroneous results.

Study 2

Participants

The second study includes 33 participants (67% female, 33% male) between the ages of 9 and 16 (mean age = 13.53, sd = 1.77), representing 14 countries. This set of participants was randomly selected to represent the Junior Summit participants as a whole (including a range of countries, urban vs. rural contexts, high- vs. low-SES, delegates vs. non-delegates).

Procedure

The second study further examined the kinds of language use found in Study 1. In addition to examining the total number of words, total number of messages, average message length, and to carrying out word frequency analyses on this data set, we also conducted a detailed hand-coded analysis of the content of participant messages. No previous work captured the detail we hoped to achieve with our analysis, and thus after looking at work by Bales (1951); Herring, (1996); Rafaeli and Sudweeks (1997); Rourke, Anderson, Garrison and Archer (2001), we ultimately developed our own codebook. In addition, because we hoped to capture the ways in which the participants themselves chose to constitute community through language, we did not start off with an *a priori* list of content categories to search for. Instead, using a Grounded Theory–inspired methodology (Strauss and Corbin 1994), in which codes are inductively and iteratively derived from the study of the phenomenon represented, we developed a 34-feature codebook to capture the ways in which participants express ideas, give feedback to peers, and present themselves online. Each message could have more than one instance of each code; for example, a single message might have multiple requests for feedback.

The 34 codes we developed divide into: (1) “informative”-- meaning that the utterance conveys information, and is able to stand on its own; and (2) “interactive” or “interpersonal” -- meaning that the utterance is in some way a response to the contribution of another (Rafaeli and Sudweeks 1997). Thus “share personal narrative” is an *informative* code, while “agree and add ideas” is *interactive*. Examples of codes within the informative category are “presenting opinions,” “proposing concrete

solutions," and "delegating work". Examples of codes within the interpersonal category are "agreement," "requesting feedback," and "greetings".

Inter-rater reliability on content coding was assessed for the team of three coders, and Cohen's kappa scores were calculated for each code. The kappa score of the individual codes (for example 'biographic information' or 'personal narrative') ranged from 0.22 to 1.0 with a mean and mode of 0.66. Codes that had low inter-rater reliability, or were very infrequent, were omitted from analysis. Only five out of the 32 codes had kappa scores below 0.5; none of those are discussed here.

Again, we took several steps to prepare the data for analysis. We removed outliers and standardized our scores. As previously described, we converted word count scores into percentages, to control for total words. Additionally, and for the same reasons, we converted each category in the content analysis to represent instances of each code for every 100 words. We chose 100 words rather than total words or even one word in order to create workable values (in most cases, we have as little as zero and as many as 25 instances of a code).

Results

For each study, we ran ANOVAs to compare mean differences between groups. Our interest was in the features that predicted election to delegate status, and so we looked at a comparison between the groups of delegates versus non-delegates. But, we are also interested in gender, and the intersection between gender and leadership. For this reason we also look at features that differentiate boys and girls in the forum, girl delegates from girls not elected as delegates, boy delegates from boys not elected as delegates; and, finally, girl delegates versus boy delegates.

Study 1: Word Use Features (n = 270)

We hypothesized that delegates would post longer messages and more messages than their peers who were not elected. In fact, "campaigning" by sending out frequent and lengthy messages may have had some effect. At the most rudimentary level, in actual numbers, delegates wrote longer messages and more overall messages than non-delegates. They wrote, in fact, more than twice as many messages, averaging 11.45 messages per week while non-delegates averaged 4.11. For the first six week, prior to the announcement of elections, in the sample of 274 children, 7,755 messages were written. 5,090 came from 231 non-delegates and 2,665 came from 43 delegates.

Interestingly, however, these figures hold true both for the six weeks prior to elections and the six weeks following elections, suggesting that delegates were not simply bulk mailing in order to be elected. Likewise, in actual untransformed means, delegates' messages were longer both during the first two weeks of the forum, and over the entire three month period before the in-person summit.

Features of Language: Delegates vs. Non-Delegates

Our next hypothesis was that those elected would employ more powerful language in their messages. For instance, we predicted that delegates would speak with certainty, avoiding tentative language and hedges. We also believed that delegates would issue directives with greater frequency, and offer more ideas than the average participant. However, contrary to prediction, there were no differences in these specific features between delegates and non-delegates.

Instead, as depicted in Table 2, delegates use more language about cognitive processes in their messages, a category that represents insightfulness, pointing out discrepancies and evaluating certainty. Delegates also include more words concerning social processes in their posts. This category represents talk about the process of communication and frequent references to "friends", "family" and other humans. Delegates also use more "we" words than non-delegates (including "we," "us," "ours"), and ask more WH-questions (Who, What, When, Where). suggesting perhaps a greater or earlier feeling of group identity. The use of 'we' words is of particular interest because it can be seen as an index of community building and thus, on an individual level, a signifier of allegiance to a group. In this same population, the use of "we" increased over the first three months of the forum for all participants while "I" decreased (Cassell and Tversky 2005). In addition to demonstrating individual versus group identity (i.e, "I" vs. "we"), pronouns are also thought to be indicative of a person's level of focus or involvement with others (Pennebaker, Mehl et al. 2003). This means that, instead of asserting beliefs and formulating ideas, delegates are concentrating on interpersonal processes.

Feature	**Delegates: Mean (sd)**	**non-Delegates: Mean (sd)**	**ANOVA**
Total Words	9,603 (6,599)	3,169 (4,503)	F (1,270) = 60.94, $p<.001$
No. of Messages	61.98 (40.01)	22.03 (26.26)	F (1,270) = 68.11, $p<.001$
Cognitive Processes[a]	.089 (.015)	.083 (.019)	F (1,270) = 3.95, $p<.05$
Insight[a]	.025 (.007)	.022 (.008)	F (1,270) = 5.84, $p<.02$
Social Processes[a]	.249 (.025)	.238 (.033)	F (1,270) = 4.50, $p<.04$
We[a]	.050 (.008)	.045 (.014)	F (1,270) = 4.80, $p<.03$
WH Questions[a]	.012 (.004)	.010 (.005)	F (1,270) = 6.71, $p<.01$
Note: a. LIWC results presented as percentage of total words.			

Table 2. Delegates and non-Delegates

Features of Language: Girls vs. Boys

In terms of gender, we predicted that fewer girls than boys would be elected leaders, since gender has been found to mitigate leadership in the face-to-face world. However, more girls (23) were elected than boys (20). We also hypothesized that girls would use

different language than boys, along the lines of the literature reviewed, such that girls would write less, but use more hedges and more personal pronouns. Contrary to prediction, there were no overall gender differences found in the word frequency counts of Study 1.

However, an examination of girl delegates and girl non-delegates does reveal some differences. For example, girl delegates average more messages and more words than girl non-delegates. As depicted in Table 3, girl delegates also employ more social processes in their messages than girl non-delegates.

Feature	Girl Delegates:	Girl Non-Delegates:	ANOVA
Total Words	10,773 (7,028)	3,124 (4,654)	F (1, 147) = 44.09, p<.001
No. of Messages	68.17 (41.58)	22.87 (28.03)	F (1, 147) = 43.07, p<.001
Social[a]	.250 (.030)	.240 (.036)	F (1, 147) = 4.06, p<.05
Note: a. LIWC results presented as percentage of total words.			

Table 3. Girl Delegates and non-Delegates

Similarly, boy delegates average more messages and total words than boy non-delegates. As depicted in Table 4, boy delegates also refer to work and jobs to be done more often. Boy delegates also ask more WH-Questions than their non-elected counterparts. This demonstrates that the boy delegates are concentrating on tasks, but also on interpersonal processes, more often than boy non-delegates.

Feature	Boy Delegates:	Boy Non-Delegates:	ANOVA
Total Words	8,257 (5,958)	3,222 (4,337)	F (1, 123) = 19.91, p<.001
No. of Messages	54.85 (37.91)	21.04 (24.04)	F (1, 123) = 27.02, p<.001
Job[a]	.0086 (.0034)	.0088 (.0068)	F (1, 123) = 6.06, p<.02
WH-Questions[a]	.011 (.004)	.010 (.005)	F (1, 123) = 7.37, p<.007
Note: a. LIWC results presented as percentage of total words.			

Table 4. Boy Delegates and non-Delegates

Study 2: Word Use Features and Additional Content Analysis (n = 30)

Our second study adds considerably more detail to what we know about the JUNIOR SUMMIT participants. The LIWC is capable of capturing many aspects of an individual's writing style, but only those that can be explored through the frequency of particular lexical items or groups of words. Thus, in addition to word frequency analyses, in this second study we also present results from a methodology that allowed us to concentrate on the content of the participants' messages. For example, categories such as "giving

feedback on an idea" cannot be captured through analyses of single words, but are an important index of involvement with others. Our content analyses, therefore addressed questions such as how the children proposed new ideas, whether they gave feedback to one another, and the nature of their feedback. For each table below, the items listed in **BOLD** represents hand-coded content analysis features.

In the most general terms, for this sample as well we predicted fewer girls than boys to be elected leaders, since gender has been found to mitigate leadership. However, in Study 2, more girls (13) were elected than boys (9).

We wondered whether content analysis would reveal more powerful language, and once again, our first hypothesis was that delegates would employ more powerful language in their messages. For instance, we predicted that delegates would offer advice, make counter-arguments, and so forth. We also believed that delegates would issue directives with greater frequency, and offer more ideas than the average participant. Because delegates would be engaged in this kind of task talk, we believed that they would share less information about themselves.

Results indicated that delegates did indeed share less biographical information about themselves, and were less likely to engage in social niceties, or to agree without adding further information. Thus their language concentrates more on the work of the JUNIOR SUMMIT, and less on externalities or superficialities. However, our other hypotheses were proven resoundingly wrong…once again.

As depicted in Table 5, delegates offer advice less often than non-delegates, and less often offer a counterpoint to an idea or topic. Delegates, on the other hand, did synthesize the ideas of the group or another individual more often than non-delegates. They also referred to themselves more often. Remember that these analyses were all conducted on frequency data: the number of these features found per one hundred words. Thus, our analyses are not skewed by the fact that delegates produced a sheer quantity of messages greater than non-delegates.

Feature	Delegates: Mean (sd)	non-Delegates: Mean (sd)	ANOVA
Total Words	12,964 (7793)	6,665 (5430)	F (1,29) = 6.27, $p<.02$
Words Per Message	173.62 (67.83)	112.53 (37.87)	F (1,29) = 5.15, $p<.03$
Amplifiers[a]	.006 (.002)	.009 (.003)	F (1,29) = 8.58, $p<.007$
Certainty[a]	.022 (.005)	.026 (.004)	F (1,29) = 5.56, $p<.03$
Fillers[a]	.0027 (.0010)	.0031 (.0016)	F (1,29) = 4.29, $p<.05$
Self-Reference[a]	.413 (.026)	.390 (.026)	F (1,29) = 8.02, $p<.008$
Offer Advice[b]	.006 (.012)	.014 (.019)	F (1,29) = 5.61, $p<.03$
Agree[b]	.068 (.069)	.116 (.063)	F (1,29) = 4.42, $p<.04$
Ask for Information[b]	.108 (.073)	.204 (.165)	F (1,29) = 6.97, $p<.01$
Share Biographical Info[b]	.241 (.161)	.459 (.205)	F (1,29) = 7.07, $p<.01$

Feature	Delegates: Mean (sd)	non-Delegates: Mean (sd)	ANOVA
Counterpoint[b]	.037 (.039)	.079 (.046)	F (1,29) = 9.91, p<.004
Niceties[b]	.279 (.185)	.407 (.191)	F (1,29) = 4.71, p<.04
Synthesize Ideas[b]	.021 (.025)	.009 (.012)	F (1,29) = 5.39, p<.03

Note: a. LIWC results presented as percentage of total words. b. Content analysis results presented as number of occurrences per 100 words.

Table 5. Delegates and non-Delegates

Features of Language: Girls vs. Boys

We also hypothesized that the content analysis would reveal that girls used different language than boys online, along the lines of the literature reviewed, such that girls would use more hedges or tentative language. In fact, while it was true that girls apologized more often than boys, results indicated that boys used more fillers, such as "You know?" or "I mean". They also used more hedges, such as "sort of", "kinda", "perhaps", or "almost" than girls.

On the other hand, boys also offer advice more often, and make more JUNIOR SUMMIT-related references. See Table 6.

Feature	Boys: Mean (sd)	Girls: Mean (sd)	ANOVA
Fillers[a]	.0032 (.0015)	.0027 (.0010)	F (1,29) = 5.30, p<.03
Hedges[a]	.007 (.002)	.006 (.002)	F (1,29) = 5.01, p<.03
Junior Summit References[a]	.007 (.004)	.004 (.002)	F (1,29) = 5.31, p<.03
Offer Advice[b]	.014 (.018)	.006 (.012)	F (1,29) = 5.70, p<.02
Apologize[b]	.029 (.023)	.080 (.058)	F (1,29) = 4.49, p<.04

Note: a. LIWC results presented as percentage of total words. b. Content analysis results presented as number of occurrences per 100 words.

Table 6. Boys and Girls

Gender and Leadership: Girl Delegates and Boy Delegates

Within the group of delegates, we expected to find similar differences in language use, along the lines of the literature reviewed, such that girl delegates would use more tentative language than boy delegates, but also speak in ways that promote group cohesiveness.

As shown in Table 7, girl delegates did indeed apologize more often, agree while adding ideas to the group, and contribute social niceties more often than their male counterparts, while boy delegates referred to themselves more often, as well as synthesizing the ideas of the group or another individual more often than girl delegates.

Feature	Boy Delegates:	Girl Delegates: Mean (sd)	ANOVA
Apology[a]	.0003 (.0002)	.0008 (.0005)	F (1,20) = 6.88, $p<.02$
Self-Reference[a]	.426 (.023)	.404 (.024)	F (1,20) = 4.54, $p<.05$
Agree & Add Ideas[b]	.039 (.036)	.101 (.068)	F (1,20) = 6.24, $p<.02$
Niceties[b]	.173 (.107)	.352 (.195)	F (1,20) = 4.57, $p<.02$
Synthesize Ideas[b]	.039 (.028)	.009 (.011)	F (1,20) = 12.06, $p<.002$

Note: a. LIWC results presented as percentage of total words. b. Content analysis results presented as number of occurrences per 100 words.

Table 7. Girl Delegates vs. Boy Delegates

We limit our discussion here to the differences over the first six weeks in order to observe the effect of gender on voting, which took place at the six-week mark. However, looking at the longer time interval, all previously reported differences also held true for the longer duration of the forum. The persistence of the trends over time suggest that these are personal attributes due to character or socialization of the individual participants, and not merely a function of their environment or what is happening during that day or week in the online forum.

Features of Language: Girl Delegates vs. Non-Delegates and Boy Delegates vs. Non-Delegates

We've described the sets of features that distinguished girl delegates from boy delegates. But what kinds of girls were elected from the pool of girls – did girl delegates, for example, more resemble the general boy population? Importantly, as we will see, many of the features of language that distinguished girl delegates from the general girl population, and boy leaders from the general boy population, were the same features that, in this particular community, distinguish boys and girls. That is, as will see (and with some notable exceptions), girls were elected when they were the most girl-like, and boys were elected for being the most boy-like, according to the language-use standards of this community.

As depicted in Table 8, girl delegates did utilize more words in each message than girl non-delegates. Girl delegates – just like the group of delegates as a whole -- also share less biographical information, and offer fewer counterpoints to ideas or topics found within the group messages.

Feature	Girl Delegates: Mean (sd)	Girl Non-Delegates: Mean (sd)	ANOVA
Words Per Message	162.26 (60.97)	111.33 (34.20)	F (1,20) = 5.11, $p<.04$
Number[a]	.015 (.003)	.018 (.004)	F (1,20) = 4.46, $p<.05$
Share Biographical Info[b]	.293 (.181)	.473 (.214)	F (1,20) = 4.52, $p<.05$

Feature	Girl Delegates: Mean (sd)	Girl Non-Delegates: Mean (sd)	ANOVA
Counterpoint[b]	.037 (.038)	.070 (.029)	F (1,20) = 4.67, p<.04

Note: a. LIWC results presented as percentage of total words. b. Content analysis results presented as number of occurrences per 100 words.

Table 8. Girl Delegates and Girl non-Delegates

As depicted in Table 9, there are a considerable number of differences between boy delegates and boy non-delegates. Again, in line with our hypothesis and our first study, boy delegates average more words per message than non-Delegates.

We also hypothesized that boy delegates would use more powerful language than boy non-delegates. Here, our results are mixed. We find that boy delegates use more tentative speech, such as "maybe" or "perhaps", but they also use more causation features in their language, which includes words such as "because", "effect", "hence". Boy delegates also use "I" more often, as well as general self-reference such as "me" and "we".

By comparison, boy non-delegates use more amplifiers ("really" "incredibly") as well as mild or hedged opinions. They also use more social niceties, and agree with ideas more often. On the other hand, boy non-delegates also present concrete solutions more often than their counterparts. As with the general population of delegates, boy non-delegates share more biographical information, as well as references to their homes. Thus, while boy delegates are indeed focusing on the work of the summit more than non-delegates (producing fewer social niceties, for example), their language is not more powerful than the non-delegates.

Feature	Boy Delegates: Mean (sd)	Boy Non-Delegates: Mean (sd)	ANOVA
Words per Message	190.04 (77.37)	117.94 (70.09)	F (1,9) = 7.27, p<.03
Amplifiers[a]	.006 (.0018)	.010 (.0001)	F (1,9) = 13.41, p<.005
Causation[a]	.010 (.002)	.007 (.003)	F (1,9) = 5.55, p<.04
Death[a]	.001 (.0005)	.000 (.0000)	F (1,9) = 14.48, p<.004
Home[a]	.009 (.002)	.005 (.003)	F (1,9) = 7.20, p<.03
I[a]	.375 (.017)	.328 (.024)	F (1,9) = 11.17, p<.009
Self-Reference[a]	.426 (.023)	.374 (.030)	F (1,9) = 7.75, p<.02
Tentative[a]	.065 (.00532)	.049 (.00004)	F (1,9) = 16.01, p<.003
Agree[b]	.055 (.046)	.152 (.021)	F (1,9) = 7.77, p<.02
Share Biographical Info[b]	.166 (.090)	.398 (.206)	F (1,9) = 7.34, p<.02
Niceties[b]	.173 (.107)	.475 (.140)	F (1,9) = 12.15, p<.007

Feature	Boy Delegates: Mean (sd)	Boy Non-Delegates: Mean (sd)	ANOVA
Mild Opinion[b]	.064 (.055)	.255 (.230)	F (1,9) = 6.99, p<.03
Present Concrete [b]	.039 (.024)	.162 (.067)	F (1,9) = 25.15, p<.001

Note: a. LIWC results presented as percentage of total words. b. Content analysis results presented as number of occurrences per 100 words.

Table 9. Boy Delegates and Boy non-Delegates

Strategies that Work for Both Genders or Only for One

As evident from the results presented above, the features that predict which participants of the JUNIOR SUMMIT were elected delegates to the in-person symposium in Boston were not a unitary set of features – nor a set of features motivated by previous research on leadership. Breaking down the results by gender, however, does reveal an interesting set of differences between what aspects of linguistic style characterize girl delegates vs. boy delegates, and girl and boy delegates vs. the population of boys and girls that they come from.

In this section we address what appears to be the crux of the matter: what is the interaction between gender and delegates status? What features predict being elected for both boys and girls, and what features are good for girls and bad for boys, and vice versa?

The first interaction illustrated in Figure 1 demonstrates that emphatic language is used in equal amounts by boy and girl delegates. However, in order for this to be the case, boys delegates must use more emphatic language than the general boy population, and girls must reduce the amount in which they use emphatic language. Emphatic language indicates emphasis, and includes words such as “a lot”, “really” “more” or “such a”. In general writings about gender, girls are thought to use more of these emphatic terms than boys. However, the use of emphatic language is not successful for girls. Thus, in this instance, we are seeing boys and girls converge on a strategy for leadership language, which is somewhere in between the usual use of this language by the general population of boys and girls.

The next interaction between gender and delegate status, illustrated below in Figure 2, involves *tentative* language, and also illustrates convergence in language style between boys and girls who are elected delegates. The general boy population uses virtually no tentative language. In order to be elected a delegate, however, boys’ use of tentative language skyrockets. Girl delegates, on the other hand, reduce their level of tentative language from the general girl population – ending up using less tentative language than boy delegates.

The final interaction shown below in Figure 3 demonstrates the most indicative of the interpersonal language traits, and that is synthesizing ideas that have been brought up by others. Boy non-delegates engage in virtually none of this kind of behavior. Those boys who are elected delegates, however, are even more synthetic in their posts than girl delegates.

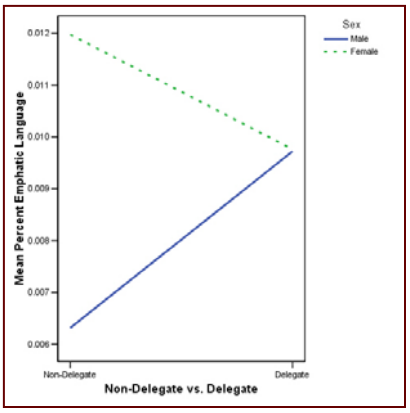

Figure 1. Emphatic Language

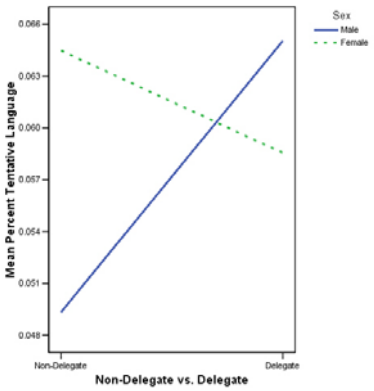

Figure 2. Tentative Language

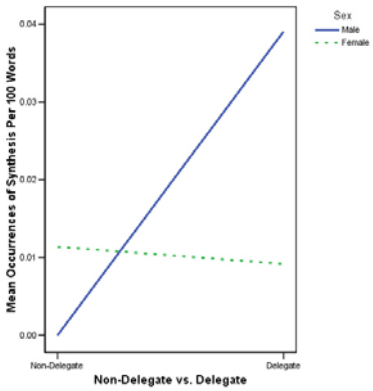

Figure 3. Synthesize Ideas

Note: Girls are represented by the dotted line; boys are represented by the solid line. The left-side represents non-delegates; the right-side represents delegates.

Conclusion

The results presented above examine the discursive and linguistic features of the JUNIOR SUMMIT, an online community of over 3,000 children from 139 different countries, in an effort to find predictors of how leaders are elected, and to explore potential gender differences among leaders. In particular, we explore the indexes of powerful and powerless language (Hart 1984; Gibbons, Bush et al. 1991; Holtgraves and Lasky 1999; Holtgraves 2002), as well as the amount of communication that took place during the first six weeks of the JUNIOR SUMMIT, in which the election took place.

Getting elected to delegate status was a highly coveted outcome. Delegates won an all-expenses paid trip to Boston where they spent a week working with faculty and students at MIT, and meeting ministers of technology and of education from around the world. JUNIOR SUMMIT participants also knew that delegates would be extensively interviewed by the international press, and would come home covered in a kind of glory rare for a ten- to sixteen-year old child. Finally, participants were told that delegates would have a chance to get the JUNIOR SUMMIT's ideas implemented at a global level. The desirable nature of this prize meant that many of the participants were intent on proving themselves worthy delegates of their group, and some were even intent on being elected at all costs. Thus, some campaigning was obvious from the very beginning of the online forum. For example, one group sent out daily missives, including the one in Figure 4 below.

This group of children, however, was not elected to delegate status. Instead, our results illustrate that delegate status seems to be predicted by an ensemble of linguistic style traits that merge presenting ideas with doing interpersonal work.

WORLD GOVERNMENT

SOME HARD TO BELEIVE BUT TRUE FACTS
*INDIA'S EXPENDITURE ON MILITARY IS RS. 35,620 CRORES.
*MILITARIES ARE INCAPABLE OF RESOLVING DISPUTES.
*THEREFORE, THIS MONEY GOES WASTE.

WE ALL WANT
*A SELF RELIANT AND SATISFIED WORLD.

HOW CAN IT BE DONE
*BY ESTABLISHING A WORLD GOVERNMENT.
*BY REMOVING MILITARIES OF ALL COUNTRIES SIMULTANEOUSLY.
*THE MONEY USED FOR MILITARY CAN BE USED FOR THE BETERMENT

Figure 4. A Sample Campaigning Post

Our first hypothesis was that delegates would post longer messages and more messages than their peers who were not elected. Results indicate that mere quantity of posts does in fact correlate with elected leadership, as those young people who posted more often, and posted longer messages, were more likely to be elected delegates, similar to recent findings on emergent leadership in other virtual communities (Yoo and Alavi 2004; Misiolek and Heckman 2005).

Our next hypothesis was that those elected would employ powerful language in their email messages. For instance, we predicted that delegates would speak with certainty, avoiding tentative language and hedges. We also believed that delegates would issue directives with greater frequency, and offer more ideas than the average participant. This turned out not to be the case, as delegates did offer ideas, but also synthesized the ideas of others. This result conflicts with some studies on leadership (Bass 1990), but resonates with others that suggest a combination of powerful and supportive language has a strong influence on groups (Hogan, Curphy et al. 1994).

We also expected elected girls to use different language than elected boys online, along the lines of the literature reviewed, such that girls would write less, but use more hedges and more personal pronouns (Schieffelin 1990; Brownlow, Rosamond et al. 2003; Eckert and McConnell-Ginet 2003). Contrary to prediction, we found no gender differences between the amount of messages or the length of messages. We expected fewer girls than boys to be elected leaders, since gender has been found to mitigate perceived leadership potential (Bass 1990). This also was not the case, since more girls than boys were elected by their peers.

A number of findings, however, differentiated girl delegates from the general girl population and boy delegates from the boy population in such a way that for many of these features the “most girl” girls and “most boy” boys were elected. More interestingly, however a number of features were predictive of election for boys and not for girls, and vice-versa. And not all of these features fall into the classical understanding

of men and women's language. In particular, whereas the language of girl delegates was quite stereotypically female, the language of boy delegates illustrated a mixture of linguistic style features, whereby some (such as the absence of social niceties or apologies) have been documented as successful for boy leaders. Others, however, are quite unexpected for male leaders. Thus, boys were very likely to synthesize the contributions of others, and to hedge their statements, and modify them with tentative language.

How do we understand these results? To our mind, it is clear that even if the online world reproduces gender and power (Herring 2001), there are ways in which the online world may allow gender and leadership to be pulled apart. In particular, as other results on emergent leadership have demonstrated, collaboration, sociability and persuasiveness may play more of a role in the absence of face-to-face features such as height (Bass 1990; Sarker, Grewel et al. 2002). In addition, as has been described for physical organizations, persuasiveness may be instantiated in different kinds of linguistic skills. These aspects of leadership may in fact give girls an advantage, as demonstrated in the higher numbers of girls elected as delegates. This means, in sum, that both advancing claims **and** listening skills may both play a primordial role in a world election where talking and listening are the only options.

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