The Language of Online Leadership: Gender and Youth Engagement on the Internet

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This study examines the JUNIOR SUMMIT online community, which consisted of 3,062 adolescents representing 139 countries, varying SES, and a range of experience with computers. The online forum culminated in the election of 100 delegates. By analyzing the messages posted before results of the election were announced, we explore whether language use predicts who was elected as a leader, as well as gender differences in leadership style. Results indicate that the young online leaders do not adhere to adult leadership styles of contributing many ideas, sticking to task, and using powerful language. On the contrary, while the young people elected as delegates do contribute more, their linguistic style is likely to keep the goals and needs of the group as central—by referring to the group rather than to themselves, and by synthesizing the posts of others rather than solely contributing their own ideas. Furthermore, both boy and girl leaders follow this pattern of interpersonal language use. These results reassure us that young people can be civically engaged and community minded, while indicating that these concepts themselves may change through contact with the next generation.

Keywords: computer-mediated communication, online communities, youth leadership, civic engagement, adolescents and Internet

A widespread fear exists that young people are losing a sense of the importance of community involvement. Youth organizations worry that young people see themselves less and less as stakeholders in public life, take a decreasing responsibility for their communities, and possess a diminished ability to lead and work with others toward common interests (Delli Carpini, 2000; Flanagan, 2004; Lerner, 2004).

Research in the field, however, gives a more subtle and complex picture of youth idealism, group participation, and leadership ability. Although political participation and conventional civic engagement, such as voting and knowledge of contemporary issues, have diminished, apolitical and community-related civic activities such as volunteer service continue to attract young people in significant numbers (Galston, 2001). In fact, 15- to 25-year-olds volunteer more than do people of any other generation (Delli Carpini & Keeter, 1997). Despite popular claims to the contrary, recent reports suggest that the Internet has begun to serve as an information resource and community-building tool for civic engagement and political participation among young Americans (Rainie & Horrigan, 2005); adolescents are increasingly using the Internet to find information on political news, issues, candidates, and campaigns (Rainie, Horrigan, & Cornfield, 2005). Thus, despite criticism as to the influence of the Internet on children and adolescents, it may be playing a positive role in their development—a role that other institutions in society are no longer filling.

The importance of these findings about youth civic and community participation lies not only in the future of democracy, but also in what they tell us about the way in which young people create identities as individuals and as agents of community and organizational change in the era of the Internet. In this vein, it is important to examine one context in which new forms of leadership are prized, and one in which age may not prevent young people from participating on equal footing with their elders. This context is Internet communities, where leadership is often emergent rather than top-down, and where the lack of face-to-face cues in communication may allow young people to construct an identity more independent of the age, race, and gender cues available in face-to-face communication.

Internet communities may be providing opportunities for young people to exercise leadership skills and become stakeholders in communities that they themselves have launched, in part, because

they are able to construct their own identities as leaders online independent of public mores and expectations. Nonetheless, how do young people construct themselves as community members and as leaders online? What kind of leadership skills succeeds for youth in the online world where visual cues are not available? What kinds of leaders do young people choose when adult mentors—and adult mores—are not present? Moreover, what can findings about youth leadership online tell us about the role of the Internet in development?

In this article, we examine the question of youth leadership and community involvement online through the analysis of one Internet youth community, the Junior Summit, an international virtual forum that brought 3,062 young people from 139 countries online to discuss global issues. The participants, speaking many languages and representing a wide variety of economic and cultural backgrounds, discussed and planned ways to make the world better using technology.

Without ever seeing each other face-to-face, and in a community almost entirely free of adult intervention, these young people traded messages in an online forum concerned with how technology might improve life for young people worldwide. 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 young people's messages to one another in the months leading up to the election, and from extensive follow-up interviews 5 years later, we are able to examine the linguistic cues and styles of language use that characterize leaders versus nonleaders in the group, as well as how leaders were perceived by the community.

Junior Summit

The goal of the Junior Summit 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 young participants with a passion for changing the world. To ensure broad participation, entry forms were sent to every ministry of education in the world, all United Nations Educational, Scientific and Cultural Organization (UNESCO) offices, offices of Education International in 300 countries, the 2,500 schools of the worldwide Associated Schools Project, the 850 members of the Association of Secondary School Principals, 300 offices of the Junior Achievement program, headquarters of Education International, and many nongovernmental organizations (NGOs) and international conferences. The result was that the hosting institution, the Massachusetts Institute of Technology (MIT), received over 8,000 applications in 30 languages, from a broad variety of urban and rural contexts, and high- and low-socioeconomic strata. (For more details about the Junior Summit program, see Cassell, 2002.)

Ultimately 3,062 young people were accepted, representing 139 different countries and varying levels of socioeconomic status and computer literacy; some of the children came from wealthy families, while some of the children were child laborers in factories; some of the children had access to a computer with an Internet connection in the home, while some had never seen a computer before. Children were able to apply to participate as individuals or in self-formed groups with their friends, or even as a part of a school class, which meant that the 3,062 participants comprised

1,000 participating groups, meaning 1,000 login IDs to the forum. The forum was neatly divided between girls (55%) and boys (45%), and the ages of participants ranged from 9 to 16 (the bottom age limit advertised in the call for participation was 10 years, but a couple of participants were not entirely truthful about their age).

Close to one half of the Junior Summit participants worked in groups, which was the choice of many of the children who applied with friends or with their school classmates. However, group participation poses a potential confounding variable for our analyses. Because the group shared a single login ID, identifying which of the young people had penned a particular message was impossible. For this reason, children who participated as a group were not considered for the current analyses. A future analysis should compare linguistic style and usage between individual and group participants to determine how excluding groups may have influenced our findings. Table 1 highlights a subset of the total Junior Summit population, which we used for this particular study.

Timeline

Once the winning entries were chosen, participants were contacted with instructions and a CD containing software to allow them to participate in the Junior Summit forum. In addition, 200 computers were distributed to schools or community centers around the world for participants to use, and 500 Internet subscriptions were also given out. When neither of these options was appropriate, the young people were reimbursed for using Internet cafés.[1] The forum was implemented as a simple mailing list with the option of participating either by e-mail or through a web interface. Running over the Web were five translation engines to translate messages into English, Spanish, French, Portuguese, and Chinese, as specified by each participant. These translation engines were modified versions of off-the-shelf software of the translation quality available in 1998, meaning that the output resembled *gisting* more than actual translation. To improve children's access to messages written in other languages, the participants were invited to translate messages for one another.

The main activities of the Junior Summit took place over a 3-month period between September and December 1998. When the young people first logged on to the Junior Summit, they found themselves in homerooms, divided by geographic region. After 4 weeks, the participants suggested and voted on 20 topics to address and divided themselves into these topic groups. After spending another 2 weeks in the topic groups, the participants elected two delegates per topic group to attend an in-person summit in the United States, in Boston. An additional 6 weeks were spent in the topic groups, preparing for the summit, after which time the 100 delegates left to spend 1 week in Boston. This in-person summit was a place to hone their ideas through interaction with MIT professors and one another, a chance to learn more about new technology, and a chance to present their ideas to world leaders and the world press. Although the 100 delegates were in Boston,

Table 1
The JUNIOR SUMMIT Participants: Countries and Number of Participants for This Study

Region	Country	No. of participants	Region	Country	No. of participants
Africa Sub-Saharan	Botswana	2	Europe and Central Asia	Belarus	1
	Gabon	1		Bulgaria	1
	Guinea	1		Croatia	1
	Kenya	5		Denmark	1
	Namibia	2		Estonia	1
	Nigeria	1		France	2
	South Africa	12		Georgia	2
	Tanzania	1		Germany	1
	Uganda	4		Greece	9
East Asia and Pacific	Australia	9		Hungary	1
	China	23		Ireland	1
	Fiji	1		Italy	1
	Guam	1		Lithuania	1
	Hong Kong (China)	2		Moldava	1
	Indonesia	3		Norway	1
	Japan	1		Poland	1
	Malaysia	3		Portugal	2
	Mongolia	1		Romania	4
	New Zealand	9		Russian Federation	1
	Niue	4		Serbia	1
	Papua New Guinea	4		Spain	1
	Philippines	2		Sweden	1
	Samoa	2		Turkey	2
	Singapore	8		Ukraine	2
	South Korea	1		United Kingdom	8
	Taiwan	4		Malta	3
	Thailand	8	Middle East and North Africa	Israel	3
	Tonga	1		Jordan	2
	Vietnam	1		Lebanon	13
Latin America and Caribbean	Bahamas	1		Morocco	1
	Bermuda	1		Qatar	1
	Bolivia	1		United Arab Emirates	9
	Brazil	7	North America	Canada	23
	Cayman Islands	1		United States	25
	Colombia	2	South Asia	Bangladesh	1
	Costa Rica	2		India	11
	Ecuador	2		Maldives	1
	Jamaica	9		Nepal	2
	Mexico	2		Pakistan	6
	Paraguay	1		Sri Lanka	1
	Saint Vincent	1			
	Trinidad & Tobago	1			
	Uruguay	1			

Note. This chart assigns countries to regions according to the World Bank categories.

their peers on the forum were continuing to participate online, and computers and pagers were set up at the summit so that the delegates could caucus with their constituencies at home. At no point did more than one adult participate in each online group, and these adult moderators were trained to keep their participation to the absolute minimum—dealing with technical issues and answering questions about the structure of the program.

Some of the participants dropped out when they discovered that they had not been elected as delegates, and some dropped out after the in-person summit. Many others stayed on for an additional 9 months, however, and as of January 2005, some were *still* participating in the JUNIOR SUMMIT online community—for example, writing an online newspaper that has survived for 7 years. In 2002 and 2003, Cassell and Tversky traveled to 21 countries to collect longitudinal data via questionnaires and extended interviews on a subset of the original 3,062 participants.

Importantly for the goals of this paper, the JUNIOR SUMMIT was a closed group of people—only those selected to participate in the online forum were able to access it—and the goals and structure of the forum were made explicit early on. Similar to the imagined communities of nationalism described by Anderson (1991), these young people were told to think of themselves as a community, despite the fact that they had never seen one another. However, adherence to structure and participation in the stated goals were not policed by adults. Thus the JUNIOR SUMMIT provides a particularly good opportunity for asking how the participants themselves constructed themselves—or not—as a community through their communication with one another and what the nature of that communication is.

From 1998 until 2002, the children wrote almost 50,000 messages to one another. The focus of this current article, however, is the body of e-mail messages sent to the forum before announce-

ments of the delegate election results and during the most active part of the online forum. These messages allow us to explore the various linguistic strategies, conscious or not, that participants used to express themselves and win influence among their peers.

Adolescents have been early adopters of Internet technologies, which they use to seek information regarding politics, health, and school subjects (Lenhart, Rainie, & Lewis, 2001; Rainie & Horrigan, 2005), to create their own personal spaces such as Web logs (or blogs) or home pages (Antonakis, Cianciolo, & Sternberg, 2004; Huffaker & Calvert, 2005), and to chat with friends from school or meet new people online (Lenhart, Rainie, & Lewis, 2001; Rainie & Horrigan, 2005). Scholars have begun to demonstrate the ways in which Internet usage can have a profound impact on adolescent development, including social effects such as identity construction and political socialization, and cognitive effects on factors such as learning skills or attention (Calvert, Jordan, & Cocking, 2002). However, research on the developmental effects of the Internet is in its infancy, and more research is needed to fill gaps in our understanding of how young people's language is affected by the use of the Internet, how groups and friendships function online, and what role the Internet plays in the construction of peer culture, among other topics.

To our knowledge, no previous literature exists on the discourse of leadership and community involvement among adolescents online. Three literatures, however, inform our work. In this section, we review literature on community involvement and civic participation among young people, differences between face-to-face and online leadership contexts, including the notion of emergent leadership, and language development across adolescence.

Youth Civic Engagement

Scholarly interest has been increasing in community-based youth organizations, such as the boy scouts, girl scouts, YMCA, YWCA, and after-school programs, and their impact on the development of social order, civic engagement, and political participation (Flanagan, 2004). From a developmental perspective, community-based activities provide opportunities to build self-esteem, emotional skills, peer networks, social capital, practical skill sets, and possibilities for identity exploration (Dworkin, Larson, & Hansen, 2003; McLaughlin, 2000). From a democratic perspective, these communities can foster social trust, solidarity, and collectivity while still offering adolescents a chance to learn leadership skills (Flanagan, 2004).

Youth participation in community-based activities or organizations may serve as a foundation for later civic or global engagement (Youniss, McLellan, & Yates, 1997), and these organizations provide an essential sense of belonging, a feeling of worthiness, and an empowered voice (Flanagan, 2004). Adolescence is a time of political awakening; young people begin to develop a personal worldview and understand increasingly complex societal issues in which they can envision an ideal world and believe they have the ability to help build such a world (Damon, 1983; Kohlberg, 1984). Communities can serve as a catalyst for these skills, and several studies suggest that participation in community-based organizations during adolescence is related to political participation and civic engagement in adulthood (Flanagan, 2004; Youniss, McLellan, & Yates, 1997). Adolescents who participate in community-based organizations are not only less likely to be antisocial or

involved in substance abuse, they also show higher levels of trust and positive attitudes toward others, as well as a sense of solidarity and worldwide belonging (Larson, 2000). Moreover, despite fears about low levels of community involvement, high school is a high point in the life span for volunteer activities (Delli Carpini & Keeter, 1997; Jennings & Stoker, 2004).

The most effective models for community-based youth organizations involve grassroots levels of engagement, which are led by the adolescents themselves and which involve activism for social change (Cutler & Snyder, 2002; McCormack-Brown et al., 2001; Wheeler, 2000). An emphasis on the collective over the individual is paramount in these organizations, and community members (and leaders in particular) are even censured by peers if they seem to act in their own self-interest (Flanagan, 2004). This collectivism is also evident in the induction and support of younger members of the community by the older adolescents (McLaughlin, 2000) but perhaps most strikingly among the youth leaders, where commitment to the group needs and goals must remain at the forefront of attention (Roach et al., 1999).

Adolescents begin acquiring leadership skills in a variety of ways. First, family members such as parents or guardians serve as leadership role models for their children (Flanagan & Sherrod, 1998; Linden & Fertman, 1998). Adolescents also develop leadership skills through their local and immediate community, their peers and schools, and especially during participation in activities such as clubs, youth groups, and sports teams (Linden & Fertman, 1998; Youniss, McLellan, & Yates, 1997). Youth leadership in formal contexts can emerge as early as age 10, and leadership skills continue to develop through adolescence and beyond, especially when communication and decision-making are considered. However, adolescents differ in their leadership potential and skills; and no clear predictor or developmental path for good leaders appears to exist (Linden & Fertman, 1998).

Leadership Skills

The literature on youth leadership differs in striking ways from similar literature on adults. Adult leadership research has more often found correlations with traits and abilities of the individual leader (Bass, 1990), whereas Roach et al. (1999) have found that youth leaders emerge in community-based organizations through the process of identifying with, and dedicating themselves to, the community in which they participate.

Adult leadership is typically described as the ability to influence individuals to adopt collective or group goals over personal ones (Hogan, Curphy, & Hogan, 1994). In face-to-face contexts among adults, style, appearance, and language are at least as important as are the issues and beliefs of the candidates. With television, for instance, discourse may largely be conducted through visual imagery in which physical appearance and nonverbal behaviors magnify the political platform of the respective parties. Thus, for presidential candidates, happy or reassuring facial displays during television interviews elicit more change in the electorate's attitudes than does party identification, position on campaign issues, or assessment of leadership capability (Sullivan & Masters, 1988). Similarly, an experimental study of women's images shows that the manipulation of attractiveness in photographs on campaign flyers affects election results (Rosenberg, Kahn, Tran, & Le, 1991).

Although visible characteristics such as attractiveness affect elections, so do beliefs about intrinsic characteristics such as gender. Among adults, a correlation exists between elected leadership positions and gender such that men are more often elected than are women (Bass, 1990). This correlation seems to be the result of stereotypes about the inconsistency between characteristics attributed to women (to be kind, unselfish, community-minded) and the characteristics attributed to leaders (assertive, powerful, highly competent) (Heilman, 1983 as cited in Antonakis, Cianciolo, & Sternberg, 2004), and these stereotypes are so deeply felt that they are mostly not affected by exposure to women leaders (Valian, 1998).

The literature described previously holds for elections and other situations in which leaders are explicitly chosen out of a pool of candidates by their constituency to fill well-described positions. In more recent literature, however, a distinction is drawn between assigned and emergent leadership. Emergent leadership involves leadership among officially leaderless groups (Hogan, Curphy, & Hogan, 1994), an area of special interest within the study of online communities where leaders may emerge through their language or behavior. One study in emergent leadership found that sociability, responsibility, confidence, cooperation, but also dominance were factors in how emergent leaders were perceived in a group (Hogan, Curphy, & Hogan, 1994). Similarly, theories suggest that the ability to recognize different cultural values, to elicit trust, and to communicate explains how leaders emerge during the initial stages of a project (Hackman & Johnson, 2000; Sarker, Grewel, & Sarker, 2002). Interestingly, Bass (1990) found that authoritarian-style personalities are not likely to emerge as leaders in a leaderless group.

For online contexts in which facial displays and attractiveness are not available, some studies have adduced evidence for what is called the "babble theory" (Sarker, Grewel, & Sarker, 2002); that is, that the sheer amount of communication predicts leadership. Misiolek and Heckman (2005), for instance, find that leaders in virtual teams initiated communication more often than did non-leaders and received more responses from other group members. Furthermore, perceived leaders online play a more active part in initiating tasks and processes (Misiolek & Heckman, 2005). Similarly, Yoo and Alavi (2002; 2004) and Sudweeks and Simoff (2005) find that emergent leaders sent more e-mails and longer e-mails than other members did and that those e-mails more often focused on task activities.

Language Use and Linguistic Style Across Gender

In an online forum in which no nonverbal cues were used, language is the only behavioral clue to identity. Many studies have shown that people employ a speaker's language patterns to form judgments about that person. Thus speakers who use tentative linguistic devices are judged as less sociable and less competent (Gibbons, Bush, & Bradac, 1991) and perceived less favorably compared with speakers who speak with certainty (Holtgraves & Lasky, 1999). Speakers who talk more and use language that involves direct and specific features, as well as interrogation ("what do you mean?") or interruption rather than hedges ("I kinda feel") or indirection, are judged as "powerful" (Brownlow, Rosamond, & Parker, 2003).

However, these judgments formed based on linguistic style are modified by the listener's a priori beliefs about the speaker. Moreover, because online fora are fairly new and uncertain kinds of social situations, gender schemata may come into play, given that they are readily available ways of interpreting behavior (Deaux & Major, 1987, as cited in Leaper & Smith, 2004). Thus, although some consistent differences seem to exist between the language of women and that of men in work settings, such as women's increased use of passive agreement, tag questions ("isn't it?"), intensifiers ("really"), and the relating of personal experiences, and men's use of interjections, slang or informal speech, and third-person reference (Bass, 1990), studies also show that exactly the same language is interpreted differently when men use it than when women do (Carli, 1990). Additionally, the same kinds of leadership talk, such as giving directives, is judged more negatively on the part of a woman than it is of a man (Antonakis, Cianciolo, & Sternberg, 2004). Interestingly, however, in the work context language that fuses styles seen as masculine and feminine has the most influence in group management (Bass, 1990).

Although early interpretations of these results on gender and language relied on the putative tentativeness and uncertainty of women speakers (Holtgraves & Lasky, 1999)—on language use as revealing immutable features of personality—more recent work has described these phenomena as style practices that have important meanings in their communities of use (Eckert & McConnell-Ginet, 2003). That is, linguistic usage is increasingly seen not as handed down from on high, but rather as a part of the very construction of identity and group membership in communities of practice. Part of identity construction also involves using the linguistic patterns that mark affiliation with particular communities—it may pay to use language perceived as powerless if that language wins one entrance to a coveted community (Eckert & Rickford, 2001).

In sum, previous literature has illustrated that leadership, whether elected or emergent, often involves power and dominance, but not always. Especially in contexts without face-to-face cues, leadership may involve persuasion and influence, attributes that often arise from cooperation, sociability, and placing group goals over personal ones. Language is one important way to uncover the relationships among power, dominance, persuasion, and cooperation, especially in online environments. Although a considerable amount of research has been conducted on leadership, gender, and language among adults, the extent to which adolescents are replicating these behaviors, or whether young people are constructing new codes, is unclear. Furthermore, the study of how leadership emerges online is still in its infancy, typically involving adults in business or other formal organizations. An examination of leadership, gender, and language in an online adolescent community can provide insight for a variety of disciplines and questions.

Present Study

This article examines the language use and linguistic style features of an adolescent online community 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 (e.g., using hedges or tag questions), and the amount of communication that took place. We also

investigate gender and age differences in the posting behavior of the forum participants.

We pursue this investigation through data from the online interactions of JUNIOR SUMMIT participants during the first 6 weeks of a 2-month period that culminated in an online election. Based on the study of this multinational online democracy of young people, we pose the following questions:

Do the young people who were elected present themselves differently? Can we predict who was elected a leader online by looking at adolescents' 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?

Based on the previous literature described above, we hypothesized that people who are elected to attend the in-person summit will talk more than nondelegates will, in terms of both the number of messages and the length of messages. Given that assertive speech styles lead listeners both to like speakers and to accept their arguments, we expected that delegates would employ powerful language in their e-mail messages, avoiding tentative speech or hedge words, issuing more directives, and staying more on task.

Given the relationship in the literature between gender and leadership, we might expect fewer girls to be elected as delegates than would boys. As far as gender differences in language use are considered, two competing hypotheses present themselves. Given that gender schemata may be more likely to come into play when speakers' concerns for self-presentation are heightened, and when listeners are uncertain of the nature of the social situation, we might expect differences between boys and girls along the lines of the literature reviewed such that girls would write less but use more hedges and more personal pronouns. On the other hand, the online context might allow girls to construct themselves somewhat differently than they do in face-to-face contexts because they know that their bodies are not seen and that they are unknown to their interlocutors.

Methods

Participants

Our sample is threefold: (a) 299 participants (56% girls, 44% boys) between the ages of 9 and 16 ($M = 14.36$ years, $SD = 1.72$) representing 84 countries were used in the word-frequency analyses; (b) 33 participants (67% girls, 33% boys) between the ages of 9 and 16 ($M = 14.13$, $SD = 1.55$) representing 15 countries and a subset of the 299 participants were used in the hand-coded content analysis; and (c) 37 participants (68% girls, 32% boys; $M = 18.70$, $SD = 3.02$) were used in the 5-year follow-up interviews. Demographic information for the parents of these participants is not available. This study was approved by the Massachusetts Institute Technology (MIT) Institutional Review Board. Informed assent/consent was obtained from the children and their legal guardians. We give further details about participant and procedure later in this article. The participants in (b) and (c) represent a randomly selected subset of the 299 participants in (a); more details on this procedure are listed later in this article.

Procedure

The complete 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 through 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, and (3) questionnaires on sociopsychological variables (primarily self-efficacy, meaningful instrumental activity, social networks) filled out by the same subset of 78 of the young people 5 years after the Summit began.

In this article, we discuss results from analyses carried out on a subset of this huge data set: In our word frequency analyses and hand-coded content analyses, we only examine messages that youths who participated independently posted (rather than those as a part of a team or group of youths) and who chose English as the language that they would use during the JUNIOR SUMMIT (although by no means were all of these youths native-English speakers).

We employ two types of analysis to interpret the email messages: a computational word frequency software analysis (word-level) and a more sensitive human-coded content analysis (phrase-level). That is, we analyze word frequencies in messages by the entire independently participating, English-speaking sample of participants ($N = 299$), who posted 10,208 messages in the first 6 weeks of the JUNIOR SUMMIT.

Word-Frequency Analysis

As discussed by Pennebaker, Mehl, and Niederhoffer (2003), word frequency can be a powerful tool in understanding the psychological profiles of individuals and communities. We employed a computational word-frequency analysis software package, the *Linguistic Inquiry and Word Count* (LIWC) (2003), to analyze several categories, including first-person singular and plural pronouns, negations, assent, positive emotions, friends and family, and past, present, or future tense verb forms. These categories were devised and validated by Pennebaker et al. (2003) based on an extensive corpus. For instance, words such as "we," "our" and "us" fall into the "first-person plural pronoun" category, while word such as "happy," "good," and "pretty" fall into the "positive emotions" category.[2] LIWC also allows users to define their own custom dictionaries, thus we added some categories of our own, such as hedges ("Who-What-When-Where" questions), apologies, and JUNIOR SUMMIT–related language.

Even though text analysis software packages that analyze concordances and word frequencies can be powerful research tools, they have two major limitations: (1) They lack true semantic understanding; that is, these programs cannot tell us exact meanings of the passages; and (2) they do not analyze language beyond a single-word level; that is, LIWC does not analyze whole sentences or even phrases. Therefore we also hand-coded data to consider the semantics of each message, as well as performed content analysis at the phrase and clause levels. In what follows, we will discuss both the word-level and phrase-level analyses of the children's language.

We took several steps to prepare the data for statistical analyses. Because outliers disproportionately affect statistics used in analysis of variance (ANOVA), we calculated multivariate Mahalanobis distances for each subject and removed the multivariate outliers according to the expected values given in a Chi-square table for the number of variables we had ($p < .001$) (Stevens, 2002). We also examined the univariate standard scores of each participant. For each extreme score (> 3.0 or < -3.0), we reduced the value of the score to equal a standard score of 3 or -3 (Glass & Hopkins, 1995).

Because participants wrote messages of various lengths, we converted the word count scores 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

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[2] A complete list of word categories and reliability scores from LIWC are available at: http://liwc.net/descriptiontable1.php

skew the word frequency results in favor of participants who wrote longer messages; this conversion ensures that we avoid such erroneous results. Furthermore, age (calculated at the outset of the JUNIOR SUMMIT) was translated into days to ensure a continuous data distribution.

Phrase-Level Content Analysis

In addition to examining the total number of words, total number of messages, and average message length, and to carrying out word-frequency analyses on this data set, we also conducted a detailed hand-coded analysis of the phrase-level content of participant messages at the phrase and clause levels. 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), and 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 for which to search. Instead, using a grounded theory–inspired methodology (Strauss & 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 were divide into the following supracategories: (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 & 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 interactional and interpersonal category are "agreement," "requesting feedback," and "greetings."

The development of the codebook and the coding process was a collaborative endeavor that took place over the course of a year by a team of five MIT undergraduates and one staff research assistant using the grounded theory–inspired approach (Strauss & Corbin, 1994) described previously. The publicly available software, *MAXqda (http://www.maxqda.com/maxqda-eng/start.htm),* was used for the coding process. The e-mail messages initially used to develop and refine the codes, as well as the ones used for preliminary coding and to resolve disagreements, were not included in the set analyzed for research. Interrater reliability was assessed regularly during both the codebook development and the coding process, and some codes were dropped from the analysis because of poor scores. The reliabilities reported here were conducted on a sample of the complete set of messages. A similar process was employed on the content analysis of the interviews, which will be discussed later.

Each code was recorded as a continuous variable per instance. In other words, several instances of "agreement" or "shares biographical information" might be found in a particular message. Our ranges include as little as 0 and as many as 25 instances of a code for each participant. Each word, sentence, and phrase could be potentially coded; for example, three whole sentences could represent "agree and add an idea," or a single word could represent "self-reference."

Five researchers carried out the coding of the data over the course of 1 year, with three coders working at any one time, and interrater reliability on phrase-level content coding was assessed for three rounds of reliability checks. Krippendorff's alpha, which is useful for nominal data with multiple coders (Krippendorff, 2003), was assessed at 0.54, 0.75, and 0.77, respectively, resulting in an average score of 0.69. Percent-Agreement,[3] one of the most popular methods for establishing reliability of particular categories (Stemler, 2004), was also assessed for all judges on each individual code. Codes that had low interrater reliability (< 0.55) (Stemler, 2004) were removed from the codebook and omitted from the analysis.

Again, for the phrase-level analysis, we took several steps to prepare the data for analysis. Again, we removed multivariate outliers and truncated the scores of univariate outliers as previously described. For the same reasons that led us to convert word count scores into percentages, 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 to represent a more accurate "word-ratio" and create workable values for our statistical analyses.

This kind of phrase-level content analysis is extremely time consuming. Thus only data from 33 participants was content-coded for the current analysis. This set of participants was chosen to represent the JUNIOR SUMMIT participants as a whole (including the categories of countries, urban versus rural contexts, high versus low socioeconomic status, delegates versus nondelegates), but choice of participants within each of these categories was random. Once again, age—calculated at the outset of the JUNIOR SUMMIT—was translated into days to obtain a continuous data distribution.

Interviews

To investigate the downstream effects of participation in the JUNIOR SUMMIT program, extensive follow-up interviews were conducted with 78 of the original participants 5 years after the program. These participants represent a stratified sample evenly split between delegate status (delegate and nondelegate), gender, and participation level (people who posted often to the forum and people who posted very little), and then randomly selected within those categories. We purposely oversampled delegates (e.g., even though only 100 of the 3,062 children online were delegates, one half of our interview sample represented delegates) to create a more representative sample for our analyses; they also represent only 20 of the 139 countries with participation.

Most of the interviews were conducted in the homes of participants and were both audio and video recorded. Although most interviews were conducted in English (by the interviewee's request), an interpreter was always offered and was accepted on several occasions (Argentina, Bangladesh). The open-ended questions were designed to (1) elicit goals for participating in the JUNIOR SUMMIT, (2) determine the context of the adolescents' participation at home and at school (positive and negative feedback about participation from family, peers, school, assistance in participation, effects of participating), (3) draw out both positive and negative evaluations of the program, (4) gauge impact on later life choices, and (5) assess effects on social networks.

In this study, we describe some of the interview themes that emerged from analysis of 37 participants of the original 78 interviews. We present these interview results for descriptive purposes only; they do not rely on inferential statistics, nor are they generalizable to a broader population.[4] However, the results do provide insight into the actual responses of the participants obtained during the interviews.

Results

Being 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 leaders of industry and ministers of technology and of education from around the world. JUNIOR SUMMIT participants also

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[3] Percent-Agreement was calculated as two times the number of agreements divided by the total number of observations between the judges.

[4] More detailed description of methodology, as well as further analysis of interview data, will be presented in future work.

knew that delegates would be extensively interviewed by the international press and would come home covered in a kind of glory rare for a 9- to 16-year-old young person. Finally, participants were told that delegates would have a chance to get the ideas form by the JUNIOR SUMMIT 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 beginning of the online forum.

Features of Language

In accordance with the literature on adult leadership, we predicted that the elected individuals would employ more powerful language in their messages. For instance, we predicted that delegates would speak with more certainty than would nondelegates, avoiding tentative language and hedges. We also believed that delegates would issue directives with greater frequency and offer more ideas than others would. Contrary to prediction, we found no significant differences in these specific features between delegates and nondelegates in our sample.

Instead, as depicted in Table 2, delegates use more language about communication in their messages, $F(1, 295) = 4.46$, $p < .05$. Delegates also use more "we" words than did nondelegates (including "we," "us," and "ours"), $F(1, 295) = 11.72$, $p = .001$, and ask more "WH" questions (Who, What, When, Where), $F(1, 295) = 6.82$, $p < .01$, suggesting a greater 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 a previous study of this same population (Cassell & Tversky, 2005), the use of "we" increased over the first 3 months of the forum for all participants while "I" decreased. In addition to demonstrating individual versus group identity (i.e., "I" versus "we"), pronouns are also thought to indicate a person's level of focus or involvement with others (Pennebaker, Mehl, & Niederhoffer, 2003).

This finding means that, instead of asserting beliefs and formulating ideas, delegates are concentrating on interpersonal processes. The only feature nondelegates use significantly more is apologizing, $F(1, 295) = 4.38$, $p < .05$; in the data, this use often represents instances in which participants excuse the fact that they have not logged in (i.e., lacked participation) or have not performed the duties that they took on (i.e., lacked responsibility).

The word frequency analysis using LIWC is capable of capturing many aspects of an individual's writing style but only those that can be explored at the word-level. Thus, as described previously, in addition to word-frequency analyses, we also present results from a methodology that allowed us to concentrate on the phrase-level content or themes of participants' messages. For example, categories such as "giving feedback on an idea" cannot easily be captured through analysis of single words. Our content analyses therefore addresses questions such as how the young people proposed new ideas, whether they gave feedback to one another, and the nature of their feedback.

As depicted in Table 3, the one phrase-level feature that delegates ($N = 22$) demonstrated more than nondelegates ($N = 11$) was synthesizing the ideas of the group, $F(1, 29) = 5.39$, $p < .05$. Thus delegates more often started out posts with introductions such as, "I have been reading all of your messages and it sounds to me like . . ." Nondelegates, on the other hand, were more likely than delegates to agree without adding additional information, $F(1, 29) = 5.39$, $p < .05$, and offered more autobiographic information, $t'(1, 16) = 9.53$, $p < .01$ (". . . as you may know, I have been fasting . . .").

Summarizing across word-frequency (word-level) and content (phrase-level) analysis, clearly, delegates engage in the task-oriented work of summarizing ideas, but they also attend significantly to the process of community construction and the process of communication.

Gender and Leadership: Girl Delegates Versus Boy Delegates

We now turn to a comparison of boy and girl delegates. We predicted that fewer girls than boys would be elected delegates, given that gender has been found to mitigate being elected a leader in the face-to-face world. On the contrary, more girls were elected than were boys, with the percentages reflecting those of the population as a whole (girls 56%, boys 44%). In this instance, we ask whether boy and girl delegates used language differently. Within the group of delegates, we wondered whether we would find differences in word use such that girl delegates would use more tentative language than boy delegates would but also would speak in ways that promote group cohesion (affiliative language) more than boy delegates would. The boy delegates did refer to the JUNIOR SUMMIT more than the girl delegates did, which can be taken as an index of talk about the task at hand, $t'(1, 48) = 4.99$, $p < .05$; and the girl delegates used more apology words than the boy delegates did, $F(1, 64) = 7.72$, $p < .01$.

In the phrase-level analysis of the subgroup, the boy delegates differed from the girl delegates along several dimensions. The girl delegates contributed social niceties more often than did their male counterparts, $F(1, 20) = 6.29$, $p < .05$, while boy delegates synthesized the ideas of other contributors more often than did girl delegates, $t'(1, 10) = 9.147$, $p = .01$. However, girl delegates were likely to use another strategy of referring to the ideas offered by others by agreeing with other ideas (mentioning those ideas) while adding new ideas of their own, $F(1, 20) = 6.24$, $p < .05$.

More interestingly, however, we found a significant interaction between delegate status and gender for the phrase-level phenom-

Table 2

Mean Relative Frequency of Word Types in Delegate and Nondelegate Messages

	Delegates (N = 66)		Nondelegates (N = 233)	
Word type	M	SD	M	SD
Apologies	.0006	.0005	.0009*	.0011
Communication processes	.060*	.011	.057	.012
Insight	.024*	.006	.022	.008
First-person plural (we)	.051**	.009	.045	.014
"WH" questions	.012**	.004	.010	.005

Note. Results presented as fraction of total words. N = number of participants; M = mean; SD = standard deviation.
* $p < .05$. ** $p < .01$.

Table 3

Mean Relative Frequency of Phrase Level Content Types in Delegate and Nondelegate Messages

Word type	Delegates (N = 22)		Nondelegates (N = 11)	
	M	SD	M	SD
Offer advice	.006	.012	.014*	.019
Agree	.068	.069	.116**	.063
Ask for information	.108	.069	.116*	.063
Share biographical information	.241	.161	.459**	.205
Social niceties	.279	.185	.407*	.191
Synthesize ideas	.021*	.025	.009	.012

Note. Results presented as number of occurrences per 100 words. N = number of participants; M = mean; SD = standard deviation.
* $p < .05$. ** $p < .01$.

enon of synthesizing the contributions of others, $F(1, 29) = 6.763$, $p = .01$. As shown in Figure 1, no difference was noted in amount of synthesizing between girl delegates and girl nondelegates. For boys, however, nondelegates engage in virtually no synthesizing of ideas, while delegates are more likely to synthesize the ideas of others in their posts compared with either male nondelegates or female delegates or nondelegates.

The question as to what kinds of girls were elected delegates from the pool of girls is interesting to ask—for example, did girl delegates resemble the general boy population more than did girl nondelegates? This question is often posed of women leaders in the real world (Antonakis, Cianciolo, & Sternberg, 2004) and is equally important online.

Girl delegates ($M = 11,725$, $SD = 8,032$) did produce more words in each message than girl nondelegates did ($M = 3,569$, $SD = 5,040$), $t' (1, 44) = 34.309$, $p < .001$. Similarly, girl delegates ($M = 73.32$, $SD = 47.66$) also contributed significantly
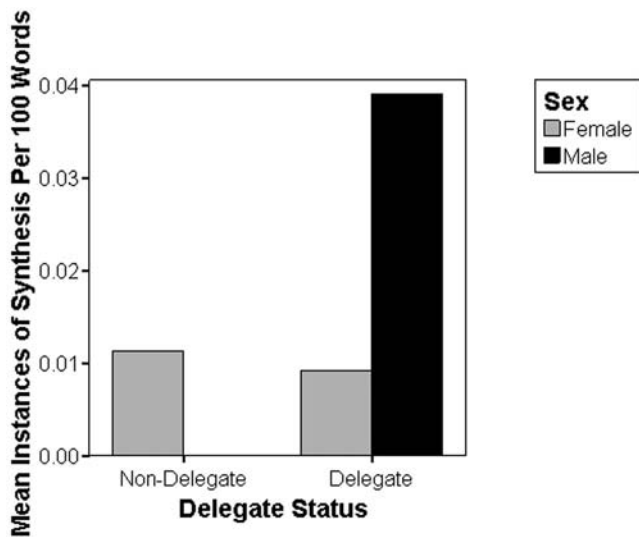
more messages than girl nondelegates contributed ($M = 27.14$, $SD = 32.87$), $t' (1, 46) = 30.607$, $p < .001$. Girl delegates—similar to the group of delegates as a whole—also use "we" ($M = 0.052$, $SD = 0.013$) more often than did girl nondelegates ($M = 0.046$, $SD = 0.014$), $F(1, 165) = 7.05$, $p < .01$, and ask more "WH" questions ($M = 0.013$, $SD = 0.004$ versus $M = 0.010$, $SD = 0.005$, respectively), $F(1, 165) = 7.46$, $p < .01$. However, no significant difference was noted for synthesizing ideas, $p < .05$.

How did boy delegates ($N = 29$) stack up against boy nondelegates ($N = 103$) in terms of word frequencies? Just as for girls, boy delegates ($M = 10,447$, $SD = 7,333$) wrote significantly more words than did boy nondelegates ($M = 3,130$, $SD = 4,006$), $t' (1, 33) = 26.628$, $p < .001$, and boy delegates ($M = 62.76$, $SD = 36.37$) wrote significantly more messages than did boy nondelegates ($M = 20.84$, $SD = 22.62$), $t' (1, 34) = 34.726$, $p < .001$.

We hypothesized that boy delegates would use more powerful language than would boy nondelegates. In fact, as depicted in Table 4, boy delegates do apologize less, $F(1, 130) = 4.77$, $p < .05$. However, boy delegates are also more likely to use words about communication than boy nondelegates are, $F(1, 130) = 5.31$, $p < .05$, to use more words about social processes than boy nondelegates use, $F(1, 130) = 8.04$, $p = .005$, and to use more "we" words than boy nondelegates use, $F(1, 130) = 5.00$, $p < .05$. In sum, boy delegates are more likely than boy nondelegates are to engage in interpersonal work. At the phrase-level of analysis, the boy delegates ($M = 0.055$, $SD = 0.047$) agreed less than did the boy nondelegates ($M = 0.152$, $SD = 0.021$), $F(1, 9) = 7.77$, $p < .05$.

Thus, among both girls and boys, delegates are more likely than nondelegates are to speak in ways that offer insights about group relationships and to tend to use language that embraces community (such as more "we" words), as well as discourse that helps synthesize the ideas of the group. This finding is replicated among the subsets of girls and boys; female delegates also use "we" more than female nondelegates do, and male delegates use more language that indexes social interaction among the community compared with male nondelegates. However, male delegates disagree more than do nondelegates. In this online community, then, language that supports group identity, sociability, and collaboration is apparently more prominent among the elected leaders of the group, to some extent, whether they are boys or girls. On the other hand, disagreeing seemingly hampers girls, but not boys, from becoming leaders.

Figure 1. Mean instances of synthesis per 100 words as a function of delegate status and sex.

Table 4

Mean Relative Frequency of Word Types in Boy Delegate and Nondelegate Messages

Word type	Delegates (N = 29)		Nondelegates (N = 103)	
	M	SD	M	SD
Apologies	.0004	.0004	.0009*	.0012
Communication processes	.061*	.008	.056	.012
Social processes	.251**	.019	.236	.027
First-person plural (we)	.027*	.009	.025	.013

Note. Results presented as fraction of total words. N = number of participants; M = mean; SD = standard deviation.
* $p < .05$. ** $p < .01$.

Linguistic Variables That Predict Online Leadership

To identify which combination of the word-level linguistic and demographic dimensions discussed thus far are most predictive of being elected a leader, we employed a forward stepwise logistic regression (with a $p < .05$ criterion for variable retention) using a dummy-coded delegate status (0,1) as the outcome variable. (Only word-level variables could be entered, not phrase-level, because only a subset of the data was hand-coded for phrase-level content features.) We entered all 47 word-level features plus gender as variables into the regression and used the total data set of 10,208 messages. In data sets such as the current one, in which many independent variables are continuous (age in days, number of uses of a linguistic variable), logistic regression of this sort is appropriate.

In line with research on adult members of online communities, we hypothesized delegates might have been more active than their nondelegate peers were, and therefore we expected to find delegates posting longer messages and more frequent messages than would their peers who were not elected. In this model, participants who used more words are more than three times more likely to be elected as delegates than are their counterparts. For the first step of the model, the total amount of words used in the forum is not only a significant contributor, it also accounts for 32% of the variance of the model (Table 5, *Model 1*).

In *Model 2,* both total words and words that reflect social processes (e.g., talk, discuss, converse) emerge as significant independent predictors of delegate status. In *Model 3,* words that refer to the JUNIOR SUMMIT project (e.g., topic groups, action plans, reporters, moderators) emerge as a significant contributor, while total words and social processes remain. In *Model 4,* the first negative coefficient emerges. Participants who use first-person singular (e.g., I, my, mine) are 32% *less* likely to be elected a delegate.

Model 5 represents the strongest model of predictors. It includes the previous variables, while exclusive language (e.g., but, except, without) also emerges as another negative coefficient. In this final model, participants who use more words are still more than three times likely to be delegates than are their counterparts; they are also twice as likely to be delegates if they use more social processes words or refer to the JUNIOR SUMMIT itself. By contrast, participants who use more self-reference or exclusive words are 37% and 33% less likely to be delegates, respectively.

This final model accounts for 39% of the variance, not that much more than the amount of variance accounted for by total words alone. However, these specific word features examine subtleties in language such that a 6% increase in explanation is still an important finding. We also note that the -2 log-likelihoods continue to decrease from 246.48 in *Model 1* to 227.29 in *Model 5,* showing the increasing strength as our models are built.

To summarize the results, these logistic regression results confirm our hypotheses on leadership. First, gender is not predictive of delegate status. Delegates do talk more in sheer number of words but also in terms of the types of words they use, which reflect social processes. Second, uses of JUNIOR SUMMIT words represent

Table 5

Step-wise Logistic Regression Results of Delegate Status by Word-level Language

	β	SE β	Wald	df	p	Odds ratio
Model 1						
Words	1.18	0.17	49.11	1	.001	3.26
$R^2 = 0.32*$						
Model 2						
Words	1.17	0.17	46.48	1	.001	3.22
Social Processes	0.48	0.19	6.06	1	.01	1.61
$R^2 = 0.34*$						
Model 3						
Words	1.19	0.17	47.27	1	.001	3.28
Social Processes	0.56	0.20	7.69	1	.01	1.76
JUNIOR SUMMIT	0.35	0.16	4.76	1	0.05	1.43
$R^2 = 0.36*$						
Model 4						
Words	1.19	0.17	46.66	1	.001	3.29
Social processes	0.59	0.21	8.43	1	.001	1.81
JUNIOR SUMMIT	0.44	0.17	6.90	1	.01	1.55
First-person ("I")	−0.38	0.19	4.07	1	.05	0.68
$R^2 = 0.38*$						
Model 5						
Words	1.24	0.18	47.48	1	.001	3.45
Social Processes	0.66	0.20	10.48	1	.001	1.93
JUNIOR SUMMIT	0.41	0.17	5.86	1	.05	1.50
First-person ("I")	−0.47	0.20	5.53	1	.05	0.63
Exclusive	−0.41	0.21	3.91	1	.05	0.67
$R^2 = 0.39*$						

Note. β = coefficient; *SE* β = standard error of coefficient; *Wald* χ^2 = Wald statistic for coefficient significance; *df* = degrees of freedom; *p* = significance level for Wald statistics; R^2 = proportion of explained variance.
* $p < .01$

delegates' focus on the tasks and goals of the project itself. This notion of putting of the group needs ahead of self is also reflected in first-person singular pronoun use, which negatively predicted delegate status.

One last analysis addressed a common question about these data: Given that all of the interactions among the children took place online, where language was the only clue to identity, was it not the case that non-native speakers of English were at a disadvantage? To address this issue, we divided participants into two groups: those who lived in countries where English is an official language and those who did not. Interestingly, a Chi-square analysis did not reveal a difference in number of children achieving delegate status from English-speaking and non-English-speaking countries, $\chi^2(1, N = 299) = 0.42$, $p = .57$.

Perceptions of Leadership: Interviews with the JUNIOR SUMMIT Community

During our follow-up interviews 5 years after the launch of the JUNIOR SUMMIT, we asked participants what criteria they used to elect delegates and—if they had been delegates—why they thought they had been elected. As shown later in this article, participants had a vision of leadership that differed from the adult literature and accorded with their own community-minded group engagement.

In general, as shown in Table 6, the participants believed that working hard was the most important trait for being elected. This perception is in accordance with the reality of longer message length and higher number of messages from delegates. The second-most highly rated trait was young people who were able to represent the group, and here too perception matched reality, given that the young people who synthesized the ideas of others were elected. Interviewees also believed that having great ideas and sharing opinions made a good leader, but here the reality did not quite match perception. Although certainly delegates sent out many ideas, even in terms of raw instances, delegates were no more likely to enunciate concrete ideas than were nondelegates; and, as we have seen, agreeing with the ideas of the group was a sure way to not be elected leader, except for the younger delegates.

It is interesting to compare the participants' judgments of the qualities of a delegate with the qualities of a participant who was the most valuable to the JUNIOR SUMMIT (Table 7). In answering

Table 6
Common Quotes Describing Delegate Qualities

Common quotes	Girls (N = 25)	Boys (N = 12)	Totals
"Kids who contributed a lot/wrote a lot of messages/worked hard"	43% (16)	43% (16)	37% (22)
"Kids whose opinions I agreed with more than other people"	5% (2)	5% (2)	7% (4)
"Kids who could represent our group and make our voice heard"	14% (5)	14% (5)	12% (7)
"Kids with great ideas"	11% (4)	11% (4)	7% (4)

Note. N = number of participants.

Table 7
Common Quotes Describing Who Contributed Most

Common quotes	Girls (N = 25)	Boys (N = 12)	Totals
"Kids who could organize ideas"	3% (1)	0	2% (1)
"Kids who spoke English well"	0	9% (2)	3% (2)
"Kids with good ideas/concrete plans"	32% (12)	27% (6)	31% (18)
"Kids who could get ideas out of people/motivate others/ leaders"	3% (1)	32% (7)	14% (8)
"Kids who were interested in people/open-minded/willing to listen"	11% (4)	14% (3)	12% (7)
"Kids who put the most into it/kids who participated actively"	22% (8)	5% (1)	15% (9)
"Kids with passion"	11% (4)	14% (3)	12% (7)

Note. N = number of participants.

this latter question, once again, good ideas were believed to be important. The remaining qualities cited, however, illustrated interesting gender differences. When asked who contributed most, the most common response from boys (32%) was "kids who could get ideas out of people, motivate others, be leaders," while the most common response from girls (32%) was that the most important contributions were made by "kids with good ideas or concrete plans."

Apparently, implementing good ideas or plans is a skill that many participants believe is attributable to leadership, among both girls and boys. However, boys outnumber girls in the perception that contribution also involves synthesizing ideas or motivating others, similar to the fact of the matter and the findings that differentiate boy and girl delegates.

When asked why they themselves had been elected (Table 8), gender differences were also found in the responses: Active participation and good ideas were the most important features to boys, as well as campaigning for election, while girls believed that responding to others was also important. In fact, responding to others by adding acknowledging and then adding ideas was a feature that characterized girl delegates.

Figure 2 illustrates the best ability of a delegate to represent and synthesize the ideas of others, to refer to the social processes of the

Table 8
Common Quotes Describing Perceptions of the Elected

Common quotes	Girls (N = 25)	Boys (N = 12)	Totals
"I actively participated/I wrote a lot of messages"	11% (4)	18% (4)	14% (8)
"I campaigned/I tried to get elected"	0	5% (1)	2% (1)
"I seemed to be listening/I wrote back to each person"	8% (3)	5% (1)	7% (4)
"I had good ideas"	5% (2)	9% (2)	7% (4)

Note. N = number of participants.

> Hello, I read Katia's letter letting us know that she's dropping out. And I read Mick's wonderful reply he sent around. I'd like to add my thoughts. First of all, thank you Katia for letting us know - there are many participants who have just disappeared without a word. I believe that Katia has spoken for most of us when she tells us how discouraged she is. I have heard it from many other people and have heard of stagnation in other discussion groups. I am very frustrated right now. The groups I am in aren't doing much. [. . .] It awfully discouraging! But think of it from the perspective that we are all part of an incredible process, a process which has never before happened in the history of humanity. We are all children, essentially "dumped" into virtual rooms with a broad topic in mind, and the rest is ultimately up to us. It's difficult! The process, like any (life, school, work, a hike, everything) has it's ups and downs. That sounds kind of trite - but it's true. And it's inevitable. And it is very valuable for us as human beings. Perhaps even more so than changing the world, we are learning and growing personally, which IS indirectly shaping the future. [. . .] Practically speaking, I have a suggestion as to how we all can move forward from this point, and get out of the "rut". 1. Every group, think clearly and put something together in writing asking the question, "What is our ultimate goal?" I think that putting a finger on all of the objectives both practical and philosophical will be a good starting point. 2. Then, start by making a timeline to carry out those objectives - dividing them, starting small and then building it up. For example, "In the first two weeks we need to figure out a general organizational flow for our project. The week following that, we need to go into finer details and figure out what sub-groups will exist. The 4th week, we need to figure out how people will be elected and how people will carry out the tasks in each group. Blah, blah, blah." [. . .] And, through time and through perserverance, it will take off! I hope that we can all move forward and get back into the fun and excitement of our work and play. I am so privileged to know all of you. I feel happy and look forward to all the years we will have together. What are all your thoughts?

Figure 2. A sample post from a delegate (male, age 14, from India)

group, to make his or her contribution coherent with what came before, and to be a truly engaged member of a community.

Discussion

Many believe, as forcefully expressed by Hern and Chaulk (1997), that: "The Internet, after the automobile and TV, is the third technological innovation this century powerful enough to challenge and mutate our disintegrating collective vision of community. Although useful for exchanging e-mail and performing fact-based research, the Internet inherently denies and denigrates the crux of direct democratic theory, the possibility of face-to-face relationships" (p. 36). In this study, we have found, on the contrary, that the Internet may be making possible new kinds of democracy, new visions of community, and new ways for young people to become civically engaged. The promising part is the extent to which the Internet is making a diversity of communities possible—an online community can be found for every kind of young person, where children and adolescents around the world, with the means to log on, may meet and discuss their lives, feelings, and their view of the world around them.

The results presented here come from an investigation of the interactions among the young people of the JUNIOR SUMMIT, an online community of over 3,000 youths from 139 different countries, in an effort to find predictors of how leaders are chosen and to explore gender and age differences among leaders. In particular, we explore the sheer amount of communication, use of so-called powerful and powerless language, sociability, responsibility, and group-mindedness during the first 6 weeks of the JUNIOR SUMMIT, after which an online election took place.

Our results indicate that, in support of previous literature on adults (Misiolek & Heckman, 2005; Yoo & Alavi, 2004), 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. However, unlike previous literature on adult emergent leadership in online communities, greater focus on task and a higher number of ideas put forth were not the only correlates to leadership status. Instead, even though delegates did offer ideas, they were more likely to synthesize 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, & Hogan, 1994).

We expected fewer girls than boys to be elected leaders, given that gender has been found to mitigate perceived leadership potential (Bass, 1990). This expectation was not borne out as an equal percentage of girls and boys were elected by their peers, and gender was not a significant contributor for predicting leadership. In addition, we found no gender differences in the number of messages posted or their length.

The linguistic usage that predicted delegate status for boys and for girls shared several features but was not identical, and certainly

not all of these features fall into the classic understanding of men and women's language. In particular, although female delegates differed from male delegates by their use of social niceties, both female and male delegates engaged in interpersonal affiliative language, with girls agreeing and adding ideas, while boys synthesized the ideas of the group. Particularly interesting was our finding that male delegates, compared with the general population of boys, were more likely to engage in interpersonal language. Thus male delegates were more likely than male nondelegates were to synthesize the contributions of others and to talk about communication and social process.

When we looked at what ensemble of demographic and linguistic style variables predicted delegate status, we found that neither gender nor age was predictive. Instead, what emerged as important was sheer quantity of talk, an emphasis on the goals of the summit, and a focus on social processes and interpersonal work allied with a lack of talk about one's self.

Of course, the analyses that we presented here do not allow us to look at the quality of ideas offered, nor the way in which the participants adopted the ideas of the delegates. That kind of content analysis allied with an analysis of the social networks that revolve around the delegates' ideas will be the focus of future work. In addition, the analyses presented here focus only on children who applied to the JUNIOR SUMMIT as individuals, and children who participated in a group may have used language quite differently. Similarly, the current analyses look only at children who used English on the forum. The possibility exists that children speaking Spanish or Chinese had very different approaches to leadership. We hope to address these limitations in future work.

How do we understand these results? To our minds, clearly, even if the online world is not free of the constraints of 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 or attractiveness (Bass, 1990; Sarker, Grewel, & Sarker, 2002). In addition, as has been described for physical organizations, persuasiveness may be instantiated in different kinds of linguistic skills. This notion means, in sum, that advancing claims and listening skills may both play a primordial role in a world election where talking and listening are the only options.

We know that speakers use language to construct and represent identity in ways that are context-dependent, and in this respect, the JUNIOR SUMMIT may afford some unique situational demands and situational opportunities. Children who joined the forum knew in advance that the topic was to be the use of technology to help young people, and this topic (rather than, say, what kinds of technologies were the coolest) may have allowed all participants, both boys and girls, to demonstrate their focus on the interpersonal and the affiliative.

Most hopefully, however, we believe that adolescents may be constructing their own styles of leadership and community involvement, as well as linguistic styles of being and acting in these communities. For this reason, we look at adolescent talk not necessarily as a step toward adult ways of acting, but perhaps as an index of what is to come in the future for all of us.

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