



# The blogosphere and public relations

## Investigating practitioners' roles and blog use

Lance Porter

*Louisiana State University, Baton Rouge, Louisiana, USA*

Kaye Sweetser

*University of Georgia, Athens, Georgia, USA, and*

Deborah Chung

*University of Kentucky, Lexington, Kentucky, USA*

### Abstract

**Purpose** – The purpose of this paper is to examine the perception and adoption of blogs among public relations practitioners and how blog use relates to roles and status.

**Design/methodology/approach** – A national e-mail survey of 216 US public relations professionals was used.

**Findings** – While blog use was similar to national audiences, practitioners were maintaining mostly personal blogs and using blogs professionally at low levels. Furthermore, women lagged behind men in the strategic use of blogs. Finally, cluster analysis challenged Porter and Sallot's roles typology, reverting to the previous manager-technician dichotomy.

**Practical implications** – While practitioners use blogs at a similar level to that of the general population, they may be missing an opportunity to reach publics directly both through blogging and placing stories in blogs.

**Originality/value** – The paper provides an early look at an emerging technology that most practitioners agree will have a substantial impact on the industry.

**Keywords** Public relations, Internet, Management roles, Communication technologies

**Paper type** Research paper

### Introduction

The internet is revolutionizing public relations. Research has shown that use of the World Wide Web among communication professionals has increased in the last few years, improving productivity and efficiency, two-way communication, research, and issues communication thereby enhancing management role enactment and perceived decision-making power (Porter and Sallot, 2003, 2005; Porter *et al.*, 2001). Similarly, preliminary research has pointed to the increasing influence and credibility of blogs (Trammell and Keshelashvili, 2005; Johnson and Kaye, 2004). Contributing to the rich tradition of research in public relations roles (Pasadeos *et al.*, 1999; Sallot *et al.*, 2003), Porter and Sallot established a four-factor typology of roles and linked those roles to specific types of web use. This study will expand the work of Porter *et al.* (2001), by testing that roles typology and focusing specifically on practitioners' use of blogs, thereby contributing to the literature on roles as well as research examining communication technology in public relations.



---

## Literature

Most agree that the internet provides enormous opportunities for public relations professionals in terms of issues management, relationship management, environmental scanning, story placement (Hallett, 2008) and other key professional communications functions (Broom and Dozier, 1986; Petrison and Wang, 1993, Chikudate, 1996; Kelleher and Miller, 2006; Kent, 2008; Sallot *et al.*, 2004). Yet, researchers have noted that practitioners disagree on whether professionals are actually taking advantage of the full potential of the internet (Springston, 2001). As more internet-based communication tools emerge and gain popularity, professionals could stay ahead of the curve and understand how to integrate such tools early on. However, research has historically proven public relations practitioners as what Everett Rogers would refer to as “laggards” in the adoption of new technologies into the practice (Anderson and Reagan, 1992; Rogers, 2003; Springston, 2001; Calloway, 1991; Porter *et al.*, 2001).

In examining the actual use of internet-related public relations tools, researchers have discovered marked differences in how different types of practitioners use communication technologies (Porter *et al.*, 2001; Porter and Sallot, 2003). For example, managers use the World Wide Web more strategically (e.g. issues management, campaign preparation) than technicians (Porter and Sallot, 2003). Originally, research found males were more likely to use online databases than females in the late 1990s (Porter *et al.*, 2001), but females quickly caught up (Porter and Sallot, 2003). Porter and colleagues argue that knowledge and use of emerging communication tools increases the power that a practitioner perceives they have in his or her organization (Porter *et al.*, 2001; Sallot *et al.*, 2004; Porter and Sallot, 2005). That is, the practitioner can increase his or her viability in the organization through prestige and expert power, eventually leading to structural power if a technician is promoted within the organization (Porter *et al.*, 2001; Porter and Sallot, 2003; Johnson, 1997).

These questions about the interrelated nature of the adoption of internet-based tools and power within organizations have been raised several times in the past (Porter *et al.*, 2001). Each such study examined a new use of the internet in the practice of public relations. Here, the current research builds on the previous body of knowledge and extends scholarship by studying the perception and adoption of blogs in public relations. Similar to these earlier studies, this research further examines the relationship of these variables with organizational roles.

## Blogs as a public relations tool

Blogs, which is short for weblogs, are web pages whose entries are arranged in reverse chronological order (Blood, 2002). Since the early 1990s, these pages have gained in popularity, and a recent Pew Internet and American Life report claims that more than 57 million people read blogs (Lenhart, 2006). While this number represents only a fraction of Americans online, researchers have called bloggers (those who write blog posts) the “new influencers” among their readership (Trammell and Keshelashvili, 2005). Indeed, the most popular blogs on the internet do have a readership that rivals small media outlets, and Johnson and Kaye’s survey of readers found that they find blogs to be a credible source of information (Johnson and Kaye, 2004). Given this new and powerful medium for communicating with the public, it seems logical that public relations professionals would begin experimenting with blogs as a communication tool.

---

Accordingly, practitioners can use blogs for more passive research tasks like issues identification or environmental scanning, or they can take on more active roles by engaging bloggers or hosting an organizational blog (Edelman and Intelliseek, 2005; Sessum, 2005; Kelleher and Miller, 2006). These passive uses enable professionals a new avenue for a task they already perform. That is, blogs represent an opportunity for communication professionals to monitor less formal, word-of-mouth type of communication about their organizations or clients. Recognizing this dual nature of blogs, Coleman asserts that rather than employing the most obvious strategy of blog communication (i.e. spreading a message), one might consider a more passive approach and the role of blogs as the new “listening posts” (Coleman, 2005, p. 274). In this vein, there are numerous case studies ranging from blog discussion of poor customer service and subsequent “reputational death” by Dell computers (K.D. Payne and Partners, 2005) to the Kryptonite bike lock-ballpoint pen fiasco whereby bloggers pointed out that the supposedly impervious Kryptonite lock could be opened with a simple ballpoint pen (Swann, 2005). While a cover story in a recent issue of *Forbes* suggested that companies beware of the “attack of the blogs” (Lyons, 2005), major agencies have urged the industry to not be afraid of bloggers and to engage the community (Edelman and Intelliseek, 2005). In these cases, strategic communicators take a more active use of blogs in that they approach bloggers from a media relations perspective where they pitch items to be placed on a particular blog (Trammell, 2005; Barbaro, 2006), or even maintain an organizational blog to improve relationship management by speaking with a human voice to publics (Kelleher and Miller, 2006).

While research on blogs is beginning to move beyond an exploratory and descriptive phase, there is little scholarly research directed at blogs in public relations. In one of the first published studies of blogs in public relations, Kelleher and Miller compared the perceived relationship between the public and the organization in an experiment exposing participants to either Microsoft’s organizational blog or official web page (Kelleher and Miller, 2006). The researchers found that participants in the blog-experimental cell reported a greater relationship than those in the company web-site-exposure cell. In contrast, Kelleher (2008) found in a later experiment that practitioners working in high-tech organizations took a less accommodating stance toward publics than those practitioners working in low-tech organizations. Furthermore, Xifra and Huertas (2008) found that most blogs devoted to the practice of public relations lacked interactivity and were mostly personal in nature.

Considering that blogs offer practitioners a way to target specialized publics and the trust blog readers place in information obtained on blogs, it is logical that the public relations profession would take notice of this emergent communication technology. Given that this area is ripe for inquiry, we will examine the relationship between professional communications roles within one’s organization and blog use to determine who the early adopters among communication professionals are and what role they play in their organization.

### **Roles in public relations**

A long tradition of public relations research has documented how practitioners have endeavored to elevate the public relations function to management status (Brody, 1985; Broom, 1982; Broom and Dozier, 1986; Close, 1980; Dozier, 1984; Dozier, 1992; White and Dozier, 1992). To achieve this management status, practitioners have often turned

---

to environmental monitoring to provide management with useful information about its organizations' external environments. As effective issues managers, professionals have won influence among members of management and, consequently, more power in the decision-making process (Dozier, 1986).

Starting with Broom and Smith's (Broom and Smith, 1979) five-factor typology of roles for practitioners, researchers have closely examined roles in American public relations. Early on, researchers reduced Broom and Smith's initial five factors to two primary role factors, manager and technician (Broom, 1982), which other researchers later confirmed (Reagan *et al.*, 1989). While most practitioners profess to seeking management roles (Sullivan *et al.*, 1985), other research has shown that most practitioners occupy the technician role (Brody, 1985; Cottone *et al.*, 1985). Researchers observed that professionals tend to move from technical into management roles later in their careers (Toth *et al.*, 1998), participating more in management decision-making, earning higher salaries and even higher levels of job satisfaction (Broom and Dozier, 1986). Even so, practitioners often enjoy high levels of job satisfaction in the technician role, which many practitioners see as a more steady position (Broom and Dozier, 1986) or as more creative. Other research has shown that female professionals more often occupy the technician role (Broom, 1982; Creedon, 1991. In the Excellence study, Grunig *et al.* (2002, p. 228) found that technician roles actually broke down into internal technicians and media relations technicians. Internal technicians wrote and produced publications, while media relations technicians set up press events and wrote press releases. Managers' expertise also split into two subroles, administrative and strategic, with administrative expertise involving "the day-to-day operations of a well-run department", and strategic expertise "closely tied to a set of strategic tools a communication department needs to use the two-way models (both symmetrical and asymmetrical) and contribute to the organization's strategic planning process". However, there were again high correlations and overlap between the two managerial and the two technical roles respectively. In addition, the administrative role contained several strategic management items, including "develop goals and objectives for department", and "develop strategies to solve PR problems" (Grunig *et al.*, 2002, p. 229). Even so, Grunig *et al.* considered the strategic manager role more strategic as this role correlated more highly with two-way models.

Previously, Leichty and Springston (1996) had developed a different roles typology using Dozier's work as starting point. Citing further inconsistencies in roles research, these authors revisited the boundary spanning literature to establish more meaningful roles measures. These researchers divided the management role into theoretically meaningful subroles by factor analyzing Dozier's (1986) previous public relations role items and additional items from the boundary-spanning literature. Through both factor and cluster analysis methods, five unique groups emerged who rank ordered public relations activities differently. Using a larger and more diverse sample, Porter and Sallot (2003) partially replicated and further refined this study using similar techniques, establishing a four-factor roles typology. In that study, managers resembled the traditional manager role, scoring high on counsel, advocacy, catalyst, and gatekeeping, and low on technician and research activities, probably delegating technical and research activities to others. Likewise, internals scored high on counsel, catalyst, and technical activities, and low on advocacy. Internals scored low on gatekeeping, clearly playing the role of internal coordinators of public relations efforts.

Externals scored high in external contact, advocacy, gatekeeping, and research, and score low in technician, counsel, catalyst, training and responsibility; externals played an active role as the “public face” of an organization while being less involved in the day-to-day management of the company than managers. Technicians scored highest in technical activity, as well as high in advocacy and gatekeeping, and low in counsel, responsibility, catalyst, and research.

Similarly, Desanto *et al.* (2007) tapped into the management literature and developed a five-factor roles typology using surveys of practitioners working in the UK and the USA respectively. Both of these studies represented an important extension of the stream of research started by Broom and Dozier (1986). However, Porter and Sallot’s (2003) research more closely examined how practitioners occupying different roles use new communication technologies, which developed important distinctions we hope to test here. Porter and Sallot’s results illustrated that managers used the web at higher levels than internals or technicians. Internals conduct more web research and evaluation than technicians. Managers also conduct more web research and evaluation than externals and more issues management communication than internals. By investigating roles here in relation to blog use, we hope to shed light on early adoption of a specific web-based communication technology and to further extend understanding of roles.

### **Research questions and hypothesis**

Building on previous literature, we asked the following research questions:

*RQ1.* To what degree have public relations professionals adopted blogs and what is their professional perception of blogs?

Previous research has shown that the adoption of new communication technologies has serious implications for public relations professionals. Practitioners have typically lagged behind the general population in their adoption of new technology (Anderson and Reagan, 1992; Springston, 2001; Calloway, 1991; Porter *et al.*, 2001). However, more recent studies have shown that communication professionals have caught up to the rest of the population in their use of the World Wide Web (Porter and Sallot, 2003). Even so, users have not used these technologies strategically so much as to improve efficiency and productivity in their everyday jobs. Furthermore, preliminary research shows practitioners may either use blogs either for more passive tasks such as research and issues identification or to actively blog (Edelman and Intelliseek, 2005; Sessum, 2005; Kelleher and Miller, 2006).

*RQ2.* What is the relationship, if any, between communication professionals playing different roles in organizations and how they use blogs?

Researchers have studied new technologies and their impact on public relations roles for the past 15 years. Their results have shown that adoption of new technologies may positively impact manager role enactment (Johnson, 1997), specifically through the adoption of online databases (Porter *et al.*, 2001) and the World Wide Web (Porter and Sallot, 2003; Johnson, 1997; Sallot *et al.*, 2004), resulting in greater job satisfaction and higher salaries. Therefore, we propose the following hypothesis:

*H1.* Female practitioners will use blogs in a less strategic fashion than their male counterparts.

---

Early new technology research examining roles in public relations found that women tended to adopt later than men, which added to the reasons perhaps that women were sometimes subjugated to the technician role (Porter *et al.*, 2001). While women quickly caught up to men in their use of the World Wide Web, women still tended to use the web less strategically than men (Porter and Sallot, 2003). In terms of gender and blogs specifically, researchers have found that men are more likely to blog about public affairs rather than personal issues (Herring *et al.*, 2004). Similarly, other research has shown that females use blogs more for creative writing and socializing, while men use blogs more to gain information and to express opinions (Pederson and Macafee, 2007).

### *Method*

This study explored the relationship between public relations roles within an organization and blogs. This study employed an online multi-page survey to answer the research questions. Email surveys have been shown to be as reliable and valid as surveys collected through other modes (Roy and Berger, 2005). We invited respondents from a randomly selected sample of the Public Relations Association of America (PRSA) to participate in the survey. Several measurements involved conditional responses, and we only asked those who responded affirmatively to these items to complete the entire battery of scales used here. We automatically advanced to the next section of questioning respondents who answered “no”, keeping respondents unaware that they were not being asked to answer all of the questions on the survey.

After obtaining Institutional Review Board approval, we sent the survey invitation in three waves a week apart in early 2006. We assigned each invited respondent a unique web address so that he or she could complete the survey only once. We wrote the e-mail message invitations according to suggestions made by Porter and Whitcomb (2003), in that the message included a selectivity statement (“we are researching your use of technology in public relations”) and a deadline; respondents were guaranteed confidentially.

### **Instrument**

We arranged the items on the questionnaire by conceptual operationalizations related to the research questions. We adapted questions developed by Porter and Sallot (Porter and Sallot, 2003) to measure the role the respondent played in his or her organization. Using this 29-item scale, respondents indicated how they conducted their day-to-day duties as a communications professional. We measured these items on a five-point scale with 1 indicating the respondent performed the listed task for his or her organization “at no time” and 5 indicating the respondent performed the task “all the time”. We factor and cluster analyzed this scale to find meaningful relationships between these activities and the types of practitioners conducting each.

We determined blog use in several ways. First, we asked respondents if they blogged in a dichotomous yes/no question. We then asked those that indicated they did blog a series of questions regarding their blog use. For example, we asked if the blog was a personal and/or professional blog. We asked respondents with personal blogs if they ever discussed the public relations profession on the blog. We asked all respondents, regardless of whether they blogged themselves, how often they used blogs for professional tasks, such as monitoring clients/issues, day-to-day work, or maintaining a blog as a part of one’s job (i.e. column-related blog, for a client).

Additionally, we adapted and employed items from the Porter and Sallot study on the use of the World Wide Web by public relations professionals (Porter and Sallot, 2003). We measured these items on a five-point Likert scale and then factor analyzed them.

### *Findings*

We randomly sampled participants ( $n = 216$ ) from the PRSA directory. We sent out 2,244 e-mail invitations. However, only 1,804 went to working e-mail addresses. The response rate was 11.9 percent. This response rate is similar to other online surveys (Porter and Whitcomb, 2003), including those of public relations practitioners and students (Porter and Sallot, 2003; Porter and Sallot, 2005; Sha and Toth, 2005). In addition, the sample from this study represents demographics similar to the larger population (Fallows, 2005; Pew, 2008) further establishing the validity of the sample (Armstrong and Overton, 1977).

Of those who reported gender ( $n = 134$ ), more than half stated they were female ( $n = 81$ ; 60.4 percent) and the rest males ( $n = 53$ ; 39.6 percent). The average age of the respondents who indicated their age ( $n = 126$ ) was 44.14 years old. These professionals averaged 16.27 years ( $SD = 10.10$ ) practicing professional communications. Several respondents indicated the highest level of education they obtained ( $n = 134$ ): bachelor's degree ( $n = 77$ ; 57.5 percent), master's degree ( $n = 54$ ; 40.3 percent), and doctoral degree ( $n = 3$ ; 2.2 percent). About 36.1 percent of respondents were Caucasian, and all other ethnicities represented less than 1 percent with African Americans and Hispanics representing the most out of this group with .9 percent each. About 38.4 percent did not report race.

About 23.4 percent of respondents indicated they had agency affiliations, 19 percent had corporate affiliations, 15.3 percent had education affiliations, 13.1 percent indicated not-for-profit affiliations, 11.7 percent indicated government affiliations, 6.6 percent were sole practitioners, and 4.4 percent indicated other affiliations. Most (38.6 percent) earned annual salaries between \$60,000 to \$99,999. These professionals averaged 16.27 years ( $SD = 10.10$ ) practicing professional communications.

*Constructing the "blog use" factors.* We constructed the blog use factors from the Likert-type blog-use items adapted from previous studies of web use (Porter and Sallot, 2003; Porter and Sallot, 2005). Principal components factor analysis of the 17 items measuring blog use using varimax rotation resulted in loadings on three factors. (Results are reported in Table I.) We labeled the first factor blog "productivity and efficiency" (Cronbach's alpha = 0.88); the second factor, "communication" (Cronbach's alpha = 0.84); and the third factor, "issues management" (Cronbach's alpha = 0.72). Because of differences between other studies on technology use and the factors here in this exploratory analysis, we did not use items loading less than 0.50. For analyses requiring nominal-level variables, we divided the blog-use indices at medians into "high" and "low" levels of use. These factors proved consistent with previous roles research (Porter and Sallot, 2003; Porter and Sallot, 2005).

*Constructing the "role" factors.* We constructed the role factors from the Likert-type blog-use items adapted from previous studies of roles (Porter and Sallot, 2003; Porter and Sallot, 2005). Principal components factor analysis of the 29 items measuring blog use using varimax rotation resulted in loadings on seven factors. (Results are reported in Table II.) We labeled the first factor "counsel" (Cronbach's alpha = 0.93); the second factor, "advocacy" (Cronbach's alpha = 0.89); the third factor, "catalyst" (Cronbach's alpha = 0.85), the fourth factor, "technical work" (Cronbach's alpha = 0.79); the fifth

Factors	M	SD	Factor loadings		
			1	2	3
<i>Factor 1: Productivity/efficiency</i>					
Track press release usage	1.71	1.03	0.915		
Evaluation	1.54	0.89	0.824		
Improve a pitch by researching individual reporters	1.72	1.06	0.701		
Prepare client or prospect presentations	1.41	0.69	0.681		
Prepare for public relations campaigns	1.75	0.93	0.595		
<i>Factor 2: Communication</i>					
Communicate in online communities	1.62	0.95		0.777	
Manage issues	1.50	0.91		0.644	
Target publics	1.68	0.97		0.641	
Monitor online communities	1.91	1.13		0.590	
Monitor news	2.52	1.28		0.533	
<i>Factor 3: Issues management</i>					
Identify issues	2.03	1.15			0.886
Research	1.91	1.00			0.619
Use blog subscriptions/RSS	2.07	1.38			0.529
Eigenvalues			0.705	0.403	0.685
Percent of variance explained			43.78	10.92	7.63

**Note:** Subjects were asked “How often do you use blogs to/for ...?” with 5 = very frequently and 1 = never

**Table I.**  
Factor analysis of blog  
use items

factor, “gatekeeper” (Cronbach’s alpha = 0.74); the sixth factor, “responsibility” (Cronbach’s alpha = 0.94); and the seventh factor, “research” (Cronbach’s alpha = 0.63). While early work in this area (Dozier, 1984; Leichty and Springston, 1996; Porter and Sallot, 2003) labeled the fourth factor “technician”, the term “technician” was actually tautological given that the final cluster is also named “technician”. Therefore, we changed the name of this factor to “technical work”.

*Cluster analysis.* We converted each role factor into a standardized factor score. We then performed a *k*-means cluster analysis to determine the combinations of these factors that different groups of practitioners perform on a regular basis, formulating the basis for public relations roles. Leichty and Springston’s previous research suggested a four-cluster solution and a fifth group of five outliers, and Porter and Sallot (2003) found a four-factor solution the most powerful. Here, the two-factor solution formed the best fit, with convergence occurring after ten iterations. Euclidean distances indicated that the two-cluster solution provided the cluster memberships that were most different from each other. *F*-ratios were also the largest in the two-cluster solution, indicating that each of the variables in the analysis played a large part in determining the clusters (see Tables III and IV). The first cluster consisted of 56 managers who scored highly on the counsel, advocacy, catalyst, gatekeeper, responsibility, and research role dimensions identified by factor analysis, and low on technical work. This group delegated technical activities. The second cluster consisted of 71 technicians that scored highly on technical work and low on all other factors. These two roles seem to revert to roles formulated in research previous to Leichty and Springston and Porter and Sallot (Table V).

**Table II.**  
Role factors

Factor analysis of blog use items Factors			Factor loadings							
	M	SD	1	2	3	4	5	6	7	
<i>Factor 1: Counsel</i>										
Decide to whom within your organization to send information obtained from outside sources	3.64	1.25	0.83							
Decide what portions of information acquired from outside your organization to transmit to others within your organization	3.57	1.30	0.81							
Decide when to transmit information acquired from outside your organization to others within your organization	3.51	1.30	0.74							
Keep others in the organization informed about PR matters	3.71	1.21	0.72							
Operate as a catalyst for involvement of non – PR personnel in PR matters	3.36	1.24	0.63							
Keep management/clients actively involved in PR	3.68	1.28	0.55							
Keep management informed of public reactions	3.83	1.19	0.50							
Plan and recommend courses of action	4.04	1.10	0.45							
<i>Factor 2: Advocacy</i>										
Provide information formally to outsiders that will induce to act favorably to your organization	3.39	1.26		0.83						
Provide information informally to groups outside your organization to create a favorable image	3.20	1.28		0.82						
Provide information on a formal basis to groups outside your organization intended to create a favorable image	3.35	1.22		0.79						
Provide information informally to outsiders that will induce to act favorably to your organization	3.32	1.27		0.77						
Represent your organization at events and meetings	3.18	1.31		0.46						
<i>Factor 3: Catalyst</i>										
Formally instruct others, not in PR, how to interact with people outside your organization	2.82	1.24			0.83					
Work with managers to increase their communication skills	2.96	1.29			0.81					
Informally instruct others, not in PR, how to interact with people outside your organization	3.19	1.26			0.67					
Collaborate with non – PR people to define and solve problems	3.65	1.14			0.51					
Make communication policy decisions	3.46	1.38			0.41					

(continued)

Factor analysis of blog use items Factors	M	SD	Factor loadings							
			1	2	3	4	5	6	7	
<i>Factor 4: Technical Work</i>										
Edit/rewrite communications for/from your organization for grammar and spelling	3.94	1.20					0.81			
Produce pamphlets and brochures	2.96	1.39					0.79			
Write PR materials	4.06	1.17					0.71			
Produce photography and graphics for your organization	1.38	2.67					0.66			
<i>Factor 4: Gatekeeper</i>										
Formally acquire information from sources or groups external to your organization/clients	2.99	1.32						0.75		
Informally acquire information from sources or groups external to your organization/clients	3.34	1.34						0.74		
Work with online publics	2.69	1.35						0.42		
<i>Factor 6: Responsibility</i>										
Take responsibility for success	3.56	1.35							0.81	
Take responsibility for failure	3.59	1.39							0.78	
<i>Factor 7: Research</i>										
Report public opinion survey results	2.13	1.01								0.77
Conduct communication audits	2.08	1.04								0.77
Eigenvalues			0.57	-0.36	-0.51	-0.49	-0.33	-0.41	5.32	
Percent of variance explained			39.73	8.32	7.09	5.90	4.89	3.88	3.51	

Table II.

*Tests of research questions and hypothesis.* The first research question asked to what degree communication professionals have adopted blogs and inquired as to their professional perception of the tool. Professionals were asked several questions aimed at understanding their blog adoption, perception of blogs and the role they felt blogs played in the profession. Overall, 12.5 percent of the communication professionals surveyed reported writing/maintaining a blog, with 30.8 percent contending they blog as a part of their work and 70.4 percent asserting they keep a personal blog[1]. Popular

**Table III.**  
Cluster analysis of role factors

Final cluster centers	Managers	Technicians
Counsel	0.35	-0.28
Advocacy	0.62	-0.49
Catalyst	0.16	-0.12
Technical work	-0.16	0.13
Gatekeeper	0.57	-0.45
Responsibility	0.05	-0.04
Research	0.10	-0.08
<i>n</i>	56	71

**Table IV.**  
Cluster analysis of role factors – ANOVA table representing *F* ratios

	Cluster mean square	Error df	Mean square	df	<i>F</i>	Sig.
Counsel	12.68	125	0.907	1	13.99	0.000
Advocacy	38.79	125	0.698	1	55.61	0.000
Catalyst	2.66	125	0.987	1	2.69	0.103
Technical work	2.78	125	0.986	1	2.78	0.098
Gatekeeper	32.97	125	0.744	1	44.30	0.000
Responsibility	0.270	125	1.006	1	0.27	0.605
Research	1.19	125	0.998	1	1.19	0.277

**Table V.**  
Comparisons of attributes of roles from Porter and Sallot's (2003) study and the present study

	Managers	Technicians
Porter and Sallot (2003)	<i>Hi counsel</i> <i>Hi advocacy</i> <i>Hi catalyst</i> <i>Hi gate-keeping</i> <i>Hi responsibility</i> <i>Lo technician</i> <i>Lo research and evaluation</i>	Very hi technician <i>Hi advocacy</i> <i>Hi gatekeeping</i> <i>Lo counsel</i> <i>Lo responsibility</i> <i>Lo catalyst</i> <i>Lo research</i>
Present study (2006)	<i>Very hi advocacy</i> <i>Very hi gatekeeper</i> <i>Hi counsel</i> <i>Hi catalyst</i> <i>Hi research</i> <i>Hi responsibility</i> <i>Lo technician</i>	<i>Hi technician</i> <i>Lo responsibility</i> <i>Lo research</i> <i>Lo catalyst</i> <i>Lo counsel</i> <i>Very lo gatekeeper</i> <i>Very lo advocacy</i>

**Note:** Italicised attributes are shared across role categories with the same name in both research studies

blog topics, however, were general news (36.6 percent), politics (24.1 percent), arts and entertainment (23.1 percent), and technology (13.4 percent). On a scale of 1 (never) to 5 (very frequently), professionals reported reading blogs for fun ( $M = 2.27$ ,  $SD = 1.12$ ), reading blogs written by others ( $M = 2.50$ ,  $SD = 1.10$ ), and posting comments on others' blogs ( $M = 1.54$ ,  $SD = 0.85$ ) rarely. Professionals' perceptions of blogs, however, indicated that blogs are growing in importance. On a scale of 1 (strongly disagree) to 5 (strongly agree), practitioners agreed that blogging activity will increase over the next five years ( $M = 4.07$ ,  $SD = 0.86$ ). However, there were mixed feelings about the impact of blogs on the profession, with many professionals neither agreeing nor disagreeing about whether blogging should be taught to students learning to work in the industry ( $M = 3.71$ ,  $SD = 0.87$ ), whether blogs are challenging conventional notions of the industry ( $M = 3.53$ ,  $SD = 0.97$ ), and whether they are a passing fad ( $M = 3.58$ ,  $SD = 0.80$ ). Professionals disagreed, however, that blogs are currently a standard professional communications tool ( $M = 2.93$ ,  $SD = 0.89$ ) and that blogs are factual ( $M = 2.15$ ,  $SD = 0.88$ ). The results are listed in Table VI.

RQ2 asked about the relationship, if any, between communication professionals enacting different roles in organizations and how they use blogs. Analysis of variance tests performed with each of the three blog use indices found no significant differences between the two roles. However, an examination of the specific role activity factors and the use items yielded numerous significant results. Advocacy correlated negatively with the use of blogs for sports news,  $r(127) = -0.196$ ,  $p < 0.05$ , and correlated positively with the use of RSS and blog subscriptions to keep up with the latest news,  $r(127) = 0.197$ ,  $p < 0.05$ . Catalyst correlated negatively with the use of blogs to help in day-to-day work assignments,  $r(125) = -0.242$ ,  $p < 0.01$ ; the use of blogs for timely updated information,  $r(125) = -0.187$ ,  $p < 0.05$ ; and the perception that blogs can be trusted,  $r(122) = -0.256$ ,  $p < 0.01$ , and are a threat to the industry,  $r(83) = -0.396$ ,  $p < 0.01$ . However, the catalyst role correlated positively with the use of blogs to track press release usage,  $r(43) = 0.360$ ,  $p < 0.05$  and the perception that blogs and bloggers are challenging conventional notions of the industry,  $r(43) = 0.255$ ,  $p < 0.05$ . Technical work negatively correlated with the perception that blogs are useful in crisis situations,  $r(122) = -0.200$ ,  $p < 0.05$ . Gatekeeper correlated negatively with the perceptions that blogs are factual,  $r(124) = -0.304$ ,  $p < 0.01$ ; blogs can be trusted,  $r(122) = -0.211$ ,  $p < 0.05$ ; and blogs should stay away from stories where factual content cannot be

	M	SD
<i>Blog adoption</i> <sup>a</sup>		
Read blogs for fun	2.27	1.12
Read blogs written by others	2.50	1.10
Post comments on others' blogs	1.54	0.85
<i>Perception of Blogs</i> <sup>b</sup>		
Blogs are standard PR tool	2.93	0.89
Blogging activity will increase over next five five years	4.07	0.86
Blogging should be taught to students learning to work in my industry	3.71	0.87

**Note:** <sup>a</sup> Five-point Likert-type scale, 1 = never and 5 = very frequently; <sup>b</sup> five-point Likert-type scale, 1 = strongly disagree and 5 = strongly agree

**Table VI.**  
Mean scores of perception  
of blogs and role of blogs  
in profession

verified,  $r(127) = -0.362$ ,  $p < 0.01$ . However, the gatekeeper activity correlated positively with the use of blogs to keep up with international news,  $r(127) = 0.191$ ,  $p < 0.05$ , and the frequency of posting entries on one's blog,  $r(18) = 0.514$ ,  $p < 0.05$ . Responsibility correlated positively with perceiving blogs as factual,  $r(124) = 0.187$ ,  $p < 0.05$ . Research correlated positively with the use of blogs for various types of news, including general news,  $r(127) = 0.240$ ,  $p < 0.01$ ; arts and entertainment news,  $r(127) = 0.184$ ,  $p < 0.05$ ; technology news,  $r(127) = 0.198$ ,  $p < 0.05$ ; and political news,  $r(127) = 0.247$ ,  $p < 0.01$ . This factor also correlated positively with monitoring blogs both professionally,  $r(126) = 0.196$ ,  $p < 0.05$ , and for story ideas,  $r(126) = 0.274$ ,  $p < 0.01$ ; with use of blogs to conduct research,  $r(126) = 0.184$ ,  $p < 0.05$ ; use of blogs to find story ideas,  $r(127) = 0.275$ ,  $p < 0.01$ ; use of blogs for alternative viewpoints,  $r(127) = 0.178$ ,  $p < 0.05$ ; and use of blogs to identify issues pertinent to the organization,  $r(127) = 0.214$ ,  $p < 0.05$ . Additionally, the issues management blog use factor correlated positively with the research role factor,  $r(127) = 0.205$ ,  $p < 0.05$ .

The hypothesis asked how gender impacts different roles practitioners play and their blog use, if at all. In two-way ANOVA tests of each of the three blog use indices with gender as the independent variable, there was one significant main effect for gender: women used blogs for issues management less often ( $M = -0.15$ ,  $F[1, 117] = 5.90$ ,  $p = 0.02$ ) than men ( $M = 0.27$ ). There were no gender effects with role for blog use for productivity and efficiency ( $F[1, 117] = 0.292$ ,  $p = 0.09$ ) or for blog use for communication ( $F[1, 117] = 1.03$ ,  $p = 0.31$ ). Therefore, the hypothesis is supported.

## Discussion

The research conducted here has done what many public relations scholars studying the use of the internet in the profession aim to do in their work: examine an emergent tool in hopes to provide data on the adoption and uses of such a tool in the practice of public relations. Previous work, such as that done by Porter and Sallot (2003), indeed examined the use of the World Wide Web among practitioners, but their study was conducted on a tool with several different uses (e.g. e-mail, web pages, searching) at a time when the tool was ubiquitous and well-integrated into daily public relations practice. The present study, however, allows researchers to look at a tool with a very specific use before it is widely adopted to determine what impact roles and use have regarding the tool. As such, this study extends earlier work (Porter and Sallot, 2003) and contributes to the discipline's understanding of roles.

### *Blog adoption and perception*

Overall, blog use by public relations professionals appears to be on par with the general population. Therefore, we cannot say that public relations professionals lag behind in adopting blogs. Even so, it is evident that the use of blogging as a professional tool has not yet become a staple – even among these “early adopters” of the technology. That is, the findings indicate that 70 percent of those surveyed who said they blogged actually maintained a personal blog. Interestingly, the blog adoption mean scores for reading and interacting on blogs were very low, but the perception items about the future of blogs and the use of blogs as a standard public relations tool were markedly higher. We interpret these dubious findings to suggest that professionals believe blogs are important but are not yet ready to tactically employ them in public relations. These findings follow a similar pattern established with early

---

research on online databases and the web (Porter *et al.*, 2001). Professionals become aware of technologies and believe them important, but seem to put off adopting the technologies before they see a broad adoption among the general public.

### *Blog use factors*

The blog use factors that emerged in this study were similar – though not identical – to those found in Porter and Sallot’s earlier study on strategic communicator’s use of the World Wide Web. Interestingly, while the use factors stayed intact, the mean scores for blog use were low across the board, confirming the earlier discussed low level of use of blogs by public relations professionals. A further investigation of the blog use factors reveals that the early use of blogs in practice trends toward strategic use (research) rather than tactical use (productivity and efficiency). To say it another way, the mean scores for use of blogs for the first two factors indicated that practitioners “strongly disagreed” with the uses of blogs. However, mean scores within the research factor were the highest of all other factors. Previous work had shown that practitioners thought of the web in just the opposite way. Most of the use was not strategic, but rather for productivity and efficiency. Perhaps by looking at a very specific communications tool that is merely a part of the web, practitioners are able to think about blogs more in how these tools can serve communication strategy.

### *Roles*

With the exception of the distinctions made between “administrative” and “strategic” managers and “internal” and “media relations” technicians, the findings we report here fall in line with the work of the Excellence study (Grunig *et al.*, 2002). The Excellence study found these distinctions between managers and technicians based on professional’s use or nonuse of Grunig’s models of public relations, questions not asked in this study. Therefore, our findings support the continued existence of the manager and technician dichotomy. However, we did not find differences in the use of blogs among managers and technicians. Aside from the numerous positive correlations of blog use and perceptions with the research role, few positive correlations emerged. This finding thus further confirms that practitioners are using blogs passively for research purposes, and have not yet strategically developed blogs across the profession. Such is evidenced in the numerous correlations, for example the negative correlation between technicians and the usefulness of blogs in crisis situations (a use popularized by several case studies and some academic work). As such, the correlations reported in answering *RQ2* speak to the idea that early technology integration is a more passive act (such as using technology for research) than an active tool (such as two-way communication or employing during a crisis). These few correlations across role activities and various blog use and perceptions suggest that the adoption of blogs is generally low for all roles, and professionals generally do not perceive blogs as effective public relations tools, although some professionals viewed their future use as slightly promising. This result is in line with the findings regarding the perceptions of blogging, in that professionals agreed blogging activity will increase in the next five years but were not as committed to believing it was an important tool taught to public relations students and whether it was a passing fad.

### *Gender*

Our findings report that women are using blogs equally as often as men. Both are using blogs to increase productivity and efficiency in their work but also for communication. The only area in which men are using blogs more frequently is for issues management. As in previous work by Porter and Sallot (2003), these findings are not a function of their professional roles as there were no significant interaction effects between gender and roles. However, this finding shows that women are not thinking about blogs as strategically as men in communications, which may have important implications for their future advancement in the profession. Like findings in previous studies (Herring *et al.*, 2004; Pederson and Macafee, 2007), women may be using blogs for more social and personal reasons rather than professional ones.

### *Limitations and future research*

This study has its limitations. Since we conducted the survey online, some respondents may be biased toward online use. The low response rate could also contribute to this bias. The study was also quite lengthy. Consequently, the survey exhibited an extremely high dropout rate in the latter stages of the survey.

Future research will examine how the use of blogs evolves as more mainstream audiences embrace the format. We plan to repeat this study annually and with a more international audience to examine how blog use changes over the course of a year. The roles typology is now once again falling back into previous patterns of roles research. Therefore, roles must be examined more thoroughly and with a much larger sample for clarification and replication. By looking at a larger number of practitioners, researchers could use confirmatory factor analysis to further explore the structure of roles in public relations today.

### **Conclusions**

In examining public relations practitioners' professional use of blogs, this study furthered the work of Porter and Sallot regarding the impact of roles and gender on uses of new technology in public relations. Practitioners seem to follow Rogers' (2003) predictable patterns in adopting technology. They wait until the general population has adopted a tool before fully embracing it. Both managers and technicians seem to be taking a "wait and see" attitude toward blogs, much like they did in the early days of the World Wide Web. Building on the work of others, we expect as adoption of such tools become more prevalent and ubiquitous, differences in use will evolve based on roles.

### **Note**

1. This item was asked as two separate questions and therefore personal vs work blog numbers do not add up to 100 percent

### **References**

- Anderson, R. and Reagan, J. (1992), "Practitioner roles and uses of new technologies", *Journalism Quarterly*, Vol. 69, pp. 156-65.
- Armstrong, J.S. and Overton, T.S. (1977), "Estimating non-response bias in mail surveys", *Journal of Marketing Research*, Vol. 16, pp. 396-402.

- Barbaro, M. (2006), "Wal-Mart enlists bloggers in PR campaign", *The New York Times*, March 7, available at: [www.nytimes.com/2006/03/07/technology/07blog.html?ex = 1299387600&en = ae7585374bf280b9&ei = 5088&partner = rssnyt&emc = rs](http://www.nytimes.com/2006/03/07/technology/07blog.html?ex=1299387600&en=ae7585374bf280b9&ei=5088&partner=rssnyt&emc=rs) (accessed March 7, 2006).
- Blood, R. (2002), *The Weblog Handbook: Practical Advice on Creating and Maintaining your Blog*, Perseus Publishing, Cambridge, MA.
- Brody, E.W. (1985), "Changing roles and requirements of public relations", *Public Relations Review*, Vol. 11, pp. 22-8.
- Broom, G. (1982), "A comparison of sex roles in public relations", *Public Relations Review*, Vol. 8, pp. 17-22.
- Broom, G. and Dozier, D. (1986), "Advancement for public relations role models", *Public Relations Review*, Vol. 12, pp. 37-56.
- Broom, G. and Smith, G. (1979), "Testing the practitioner's impact on clients", *Public Relations Review*, Vol. 5, pp. 47-59.
- Calloway, L.J. (1991), "Survival of the fastest: information technology and corporate crises", *Public Relations Review*, Vol. 17, pp. 85-92.
- Chikudate, N. (1996), "Communicating through on-line database systems", in Richter, F. (Ed.), *The Dynamics of Japanese Organizations*, Routledge, New York, NY, pp. 178-88.
- Close, H.W. (1980), "Public relations as a management function", *Public Relations Journal*, Vol. 36, pp. 11-14.
- Coleman, S. (2005), "Blogs and the new politics of listening", *Political Quarterly*, Vol. 76, pp. 272-80.
- Cottone, L., Wakefield, D.G., Cottone, R.R. and North, W. (1985), "Public relations roles and functions by organization", *Public Relations Review*, Vol. 11, pp. 28-37.
- Creedon, P.J. (1991), "Public relations and women's work: toward a feminist analysis of public relations roles", in Grunig, J.E. and Grunig, L.A. (Eds), *Public Relations Research Annual*, Erlbaum, Hillsdale, NJ, pp. 67-84.
- Desanto, B., Moss, D. and Newman, A. (2007), "Building an understanding of the main elements of management in the communication/public relations context: a study of US Practitioners' Practices", *Journalism and Mass Communications Quarterly*, Vol. 84, pp. 439-54.
- Dozier, D. (1984), "Program evaluation and roles of practitioners", *Public Relations Review*, Vol. 10, pp. 13-21.
- Dozier, D. (1986), "The environmental scanning function of public relations practitioners and participation in management decision making", paper presented at the meeting of AEJMC, Norman, OK, August.
- Dozier, D. (1992), "The organizational roles of communications and public relations practitioners", in Grunig, J.E. (Ed.), *Excellence in Public Relations and Communication Management*, Erlbaum, Hillsdale, NJ, pp. 327-55.
- Edelman and Intelliseek (2005), "Trust MEedia: how real people are finally being heard, the 1.0 guide to the blogosphere for marketers and company stakeholders", available at: [www.edelman.com/image/insights/content/ISwp\\_TrustMEedia\\_FINAL.pdf](http://www.edelman.com/image/insights/content/ISwp_TrustMEedia_FINAL.pdf) (accessed January 10, 2006).
- Fallows, D. (2005), "How women and men use the internet", Pew Internet & American Life Project, available at: [www.pewinternet.org/pdfs/PIP\\_Women\\_and\\_Men\\_online.pdf](http://www.pewinternet.org/pdfs/PIP_Women_and_Men_online.pdf) (accessed September 26, 2008).

- Grunig, L.A., Grunig, J.E. and Dozier, D.M. (2002), *Excellent Public Relations and Effective Organizations. A Study of Communications Management in Three Countries*, Lawrence Erlbaum, Mahwah, NJ.
- Hallett, J. (2008), "In through the back door: using blogs to reach traditional media", *Public Relations Tactics*, Vol. 15 No. 5, p. 25.
- Herring, S.C., Kouper, I., Scheidt, L.A. and Wright, E.L. (2004) in Gurak, L., Anonijevic, S., Johnson, L., Ratliff, C. and Reyman, J. (Eds), "Women and children last: the discursive construction of weblogs", *Into the Blogosphere: Rhetoric, Community, and Culture of Weblogs*, University of Minnesota, Minneapolis, MN, available at: [http://blog.lib.umn.edu/blogosphere/women\\_and\\_children.html](http://blog.lib.umn.edu/blogosphere/women_and_children.html) (accessed May 21, 2008).
- Johnson, M.A. (1997), "Public relations and technology: practitioner perspectives", *Journal of Public Relations Research*, Vol. 9, pp. 213-36.
- Johnson, T.J. and Kaye, B.K. (2004), "Wag the blog: how reliance on traditional media and the internet influence credibility perceptions of weblogs among blog users", *Journalism & Mass Communication Quarterly*, Vol. 81, pp. 622-42.
- Payne, K.D. and Partners (2006), "Can this reputation be saved? Dell's customer service death by blogging", available at: [www.themeasurementstandard.com/Issues/1005/repaved1005.asp](http://www.themeasurementstandard.com/Issues/1005/repaved1005.asp) (accessed January 10, 2006).
- Kelleher, T. (2008), "Organizational contingencies, organizational blogs and public relations practitioner stance toward publics", *Public Relations Review*, Vol. 34, pp. 300-2.
- Kelleher, T. and Miller, B.M. (2006), "Organizational blogs and the human voice: relational strategies and relational outcomes", *Journal of Computer-Mediated Communication*, Vol. 11, pp. 395-414.
- Kent, M. (2008), "Critical analysis of blogging in public relations", *Public Relations Review*, Vol. 34 No. 1, pp. 32-40.
- Leichty, G. and Springston, J.K. (1996), "Elaborating public relations roles", *Journalism & Mass Communication Quarterly*, Vol. 73, pp. 467-77.
- Lenhart, A. (2006), "Bloggers: a portrait of the internet's new storytellers", Pew Internet and American Life Project, available at: [www.pewinternet.org/pdfs/PIP%20Bloggers%20Report%20July%2019%202006.pdf](http://www.pewinternet.org/pdfs/PIP%20Bloggers%20Report%20July%2019%202006.pdf) (accessed May 30, 2008).
- Lyons, D. (2005), "Attack of the blogs", *Forbes Magazine*, November 14.
- Pasadeos, Y., Renfro, R.B. and Hanily, M.L. (1999), "Influential authors and works of public relations scholarly literature: a network of recent research", *Journal of Public Relations Research*, Vol. 11, pp. 29-52.
- Pederson, S. and Macafee, C. (2007), "Gender differences in British blogging", *Journal of Computer-Mediated Communication*, Vol. 12 No. 4, pp. 1472-92.
- Peterson, L.A. and Wang, P. (1993), "From relations to relationship marketing: applying database technology to public relations", *Public Relations Review*, Vol. 19, pp. 235-45.
- PewInternet.org/trends (2008), "Demographics of internet users", Pew Internet & American Life Project, available at: [www.pewinternet.org/trends/User\\_Demo\\_7.22.08.htm](http://www.pewinternet.org/trends/User_Demo_7.22.08.htm) (accessed September 26, 2008).
- Porter, L.V. and Sallot, L.M. (2003), "The internet and public relations: investigating practitioners' roles and World Wide Web use", *Journalism & Mass Communication Quarterly*, Vol. 80 No. 3, pp. 603-22.
- Porter, L.V. and Sallot, L.M. (2005), "Web power: a survey of practitioners' World Wide Web use and their perception of its effects on their decision-making power", *Public Relations Review*, Vol. 31 No. 1, pp. 111-9.

- Porter, L.V., Sallot, L.M., Cameron, G.T. and Shamp, S. (2001), "New technologies and public relations: exploring practitioners' use of online resources to earn a seat at the management table", *Journalism & Mass Communication Quarterly*, Vol. 78 No. 1, pp. 172-90.
- Porter, S.R. and Whitcomb, M.E. (2003), "The impact of contact type on web survey response rates", *Public Opinion Quarterly*, Vol. 67, pp. 579-88.
- Reagan, J., Anderson, A., Sumner, J. and Hill, S. (1989), "A factor analysis of Broom and Smith's public relations roles scale", *Journalism Quarterly*, Vol. 66, pp. 175-83.
- Rogers, E.M. (2003), *Diffusion of Innovations*, 5th ed., Free Press, New York, NY.
- Roy, A. and Berger, P.E-m. (2005), "E-mail and mixed mail database surveys revisited: exploratory analyses of underlying factors affecting response rates", *Journal of Database Marketing*, Vol. 12, pp. 153-71.
- Sallot, L.M., Porter, L.V. and Acosta-Alzuru, C. (2004), "Practitioners' web use and perceptions of their own roles and power: a qualitative study", *Public Relations Review*, Vol. 30, pp. 269-78.
- Sallot, L.M., Lyon, L.J., Acosta-Alzuru, C. and Jones, K.O. (2003), "From Aardvark to Zebra: a new millennium analysis of theory development in public relations academic journals", *Journal of Public Relations Research*, Vol. 15, pp. 27-90.
- Sessum, J. (2005), "To blog or not to blog: blogs help corporations answer the call to conversation", available at: [www.gesproductions.com/Corporate\\_Blogging\\_WP.pdf](http://www.gesproductions.com/Corporate_Blogging_WP.pdf) (accessed January 10, 2006).
- Sha, B. and Toth, E.L. (2005), "Future professionals' perceptions of work, life, and gender issues in public relations", *Public Relations Review*, Vol. 31, pp. 93-9.
- Springston, J.K. (2001), "Public relations and new media technology: the impact of the internet", in Heath, R.L. (Ed.), *The Handbook of Public Relations*, Sage, Thousand Oaks, CA, pp. 603-14.
- Sullivan, B., Dozier, D. and Hellweg, S. (1985), "Practitioner pursuit of the ideal role", *IPRA Review*, Vol. 9, pp. 14-18.
- Swann, P. (2005), "Internet postings and blogger videos: Bic this! Kryptonite's bike lock-ballpoint pen fiasco from an issue contagion perspective", paper presented at the meeting of AEJMC, San Antonio, TX, August.
- Toth, E.L., Serini, S.A., Wright, D.K. and Emig, A.G. (1998), "Trends in public relations roles: 1990-1995", *Public Relations Review*, Vol. 24.
- Trammell, K.D. (2005), "Slogging and blogging through hurricane Katrina", *The Washington Post*, September 2, p. A31.
- Trammell, K.D. and Keshelashvili, A. (2005), "Examining the new influencers: a self-presentation study of A-list blogs", *Journalism & Mass Communication Quarterly*, Vol. 82, pp. 968-82.
- White, J. and Dozier, D. (1992), "Public relations and management decision making", in Grunig, J.E. (Ed.), *Excellence in Public Relations and Communication Management*, Erlbaum, Hillsdale, NJ, pp. 91-108.
- Xifra, J. and Huertas, A. (2008), "Blogging PR: an exploratory analysis of public relations weblogs", *Public Relations Review*, Vol. 34, pp. 269-75.

#### Corresponding author

Lance Porter can be contacted at: [lporter@lsu.edu](mailto:lporter@lsu.edu)