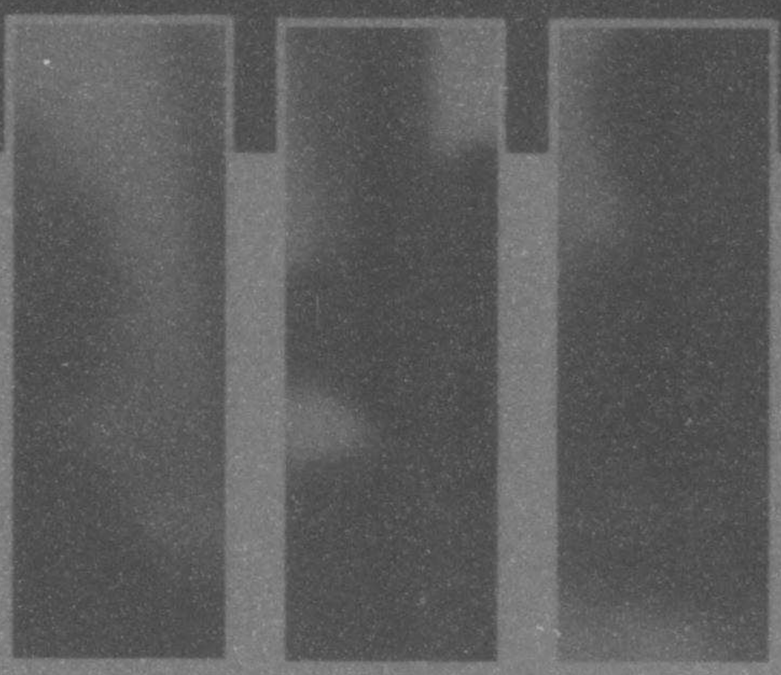
Communication Monographs



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The journal especially welcomes questions that bridge boundaries that have traditionally separated scholars within the communication discipline.

These questions should be grounded in existing understandings of communication processes, should be informed by relevant theory, and should address issues of clear theoretical, conceptual, methodological, and/or social importance.

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Family Interactions and Disordered Eating Attitudes: The Mediating Roles of Social Competence and Psychological Distress

Analisa Arroyo & Chris Segrin

This research explored the role of family interactions on young adult females' disordered eating attitudes as mediated by both social competence and psychological distress. Assessment of the family interaction variables included the perspectives of multiple family members: a young adult female, a mother, and a sibling. Results generally supported the proposed model such that family interaction patterns, namely family-expressed emotion, were associated with low social competence, low social competence was associated with psychological distress, and psychological distress was associated with disordered eating attitudes. Practical applications of these results are discussed, as implications of this study draw attention to corrosive family communication patterns and inadequate social competence as key factors related to disordered eating attitudes.

Keywords: Disordered Eating Attitudes; Family Interactions; Social Competence; Psychological Distress

Eating disorders affect millions of people and their families (American Psychiatric Association, 2010). The point prevalence of eating disorders in the United States is approximately 0.2–0.5% for anorexia nervosa, 1–2% for bulimia nervosa, and 1.5–2% for binge eating disorder (Wilson, Becker, & Heffernan, 2003), with the numbers steadily increasing (American Academy of Pediatrics, 2003). Clinical eating disorders are disproportionately high among females at 90% of all cases (American Psychiatric Association, 1994) and have a higher risk of mortality than any other

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mental health disorder (Millar et al., 2005; Steinhausen, 2002). While there are many risk factors that influence the onset of disordered eating attitudes, such as gender, cultural pressures, and genetic factors (Striegel-Moore & Bulik, 2007), the present study focuses on the role of family interactions in the creation of young adult females' body image. Specifically, in order to test the potential mechanisms related to problematic eating attitudes and behaviors, a hypothesized model is tested wherein family interactions are associated with females' disordered eating attitudes through their own social competence and psychological distress. Disordered eating attitudes in the current study are conceptualized as body dissatisfaction and unhealthy weight control beliefs and practice, including self-perceptions of body shape, dieting, awareness of food contents, and food preoccupation (Ocker, Lam, Jensen, & Zhang, 2007).

Family Dynamics and Disordered Eating Attitudes

Families instill values, behaviors, and attitudes in their offspring (Parke & Buriel, 2008); thus, a substantial amount of research has connected family dynamics and disordered eating attitudes. For instance, a weight-centric family environment (i.e., families highly concerned with eating patterns and weight) is associated with eating disorders in children (Kluck, 2010) and eating meals as a family is related to the eating habits of their children (Patrick & Nicklas, 2005; Videon & Manning, 2003). Families can also enact a variety of pathogenic interaction patterns that are associated with disordered eating, such as family expressed emotion, stressful mealtime or food-related communication, disturbed affective communication, and poor problem solving (Segrin & Flora, 2011).

Specific relationships within the family (e.g., mother–daughter, siblings) also influence body-image concerns for family members. A considerable amount of research has specifically focused on mothers' influence on daughters' body-image concerns. For instance, warmth in mother–daughter relationships is a protective factor of eating pathology and weight concerns, whereas a lack of closeness and difficulty talking with mothers are risk factors (Al Sabbah et al., 2009; Bäck, 2011; Wheeler, Wintre, & Polivy, 2003). Mothers also influence daughters' body image through the modeling of eating behaviors and attitudes (e.g., Cooley, Toray, Wang, & Valdez, 2008; Kichler & Crowther, 2001) and through direct communication. A mother's comments about her own weight, as well as expressed concern about eating habits and appearance of the child, teasing, and encouragement to lose weight are associated with body dissatisfaction and disordered eating in children (Kluck, 2010; Neumark-Sztainer et al., 2010; Wertheim, Martin, Prior, Sanson, & Smart, 2002).

Additionally, siblings have been found to influence each others' enactment of certain dysfunctional behaviors (e.g., sexual behaviors, drug use; D'Amico & Fromme, 1997; Duncan, Duncan, & Hops, 1996). Research investigating siblings and body image concentrates on appearance-based social comparisons and reveals that siblings who engage in social comparisons with a skinnier or more attractive sibling experience higher levels of body dissatisfaction in both adolescence and young

adulthood (Rieves & Cash, 1996; Tsiantas & King, 2001). Siblings also report similar levels of body size distortion, body dissatisfaction, preference for thinness, as well as parental modeling of weight concerns, dieting, and pressure to be thin (Tsiantas & King, 2001). These similarities imply that sociocultural pressures may be transmitted to siblings through the family and through each other (Tsiantas & King, 2001). Thus, there may be a subculture of thinness and beauty within families wherein family members' interactions and endorsement of the thin-ideal place individuals at risk for body-image disturbance (Coomber & King, 2008).

Toward that end, in order to best understand how the family is associated with disordered eating attitudes, it is important to understand the dynamic interactions and relationships within the family. Although a considerable amount of research has been conducted on the association between family interactions and eating disorders, this research is often limited to the discernment of only one family member (Cook-Darzens, Doyen, Falissard, & Mouren, 2005). To allow for a more comprehensive and accurate picture of the family's communication and its role in individuals' disordered eating attitudes, one of the more novel elements of this research is the specification of the family interaction variables from the perspective of a daughter, a mother, and a sibling. The inclusion of multiple family members lessens concerns over common method variance inherent in exclusive self-report measures taken from an individual (Richardson, Simmering, & Sturman, 2009; Spector, 2006).

The Hypothesized Model

The current research utilizes Mallinckrodt, McCreary, and Robertson's (1995) model of disordered eating, family dynamics, and social competence, wherein they propose that familial factors directly and indirectly influence the onset of eating disorders *through* social competence. The inclusion of social competence specifies a precise mechanism through which disordered eating attitudes may occur. Mallinckrodt et al.'s (1995) model was originally conceptualized to describe the co-occurrence of family incest and disordered eating. They conceptualized family factors in terms of family cohesion and control (Moos & Moos, 1986), as well as childhood attachment by utilizing Parker, Tupling, and Brown's (1979) Parental Bonding Instrument that measures parents' care and overprotection. Incest and social competence, operationalized in terms of social intimacy (Miller & Lefcourt, 1982), social self-efficacy (Sherer et al., 1982), and social network size (Sarason, Sarason, Shearin, & Pierce, 1987), among others, were modeled as simultaneous mediating paths. In extending Mallinckrodt et al.'s model, a series of toxic family communication patterns are substituted for incest in the current study, with comparable assumed effects.

Our research is based on a hypothesized model predicting the mediating roles of both social competence and psychological distress in the relationship between family interactions and disordered eating attitudes (Figure 1). Family interactions are predicted to be associated with various indicators of social competence such as social skills and positive relations with others, and social competence is predicted to be

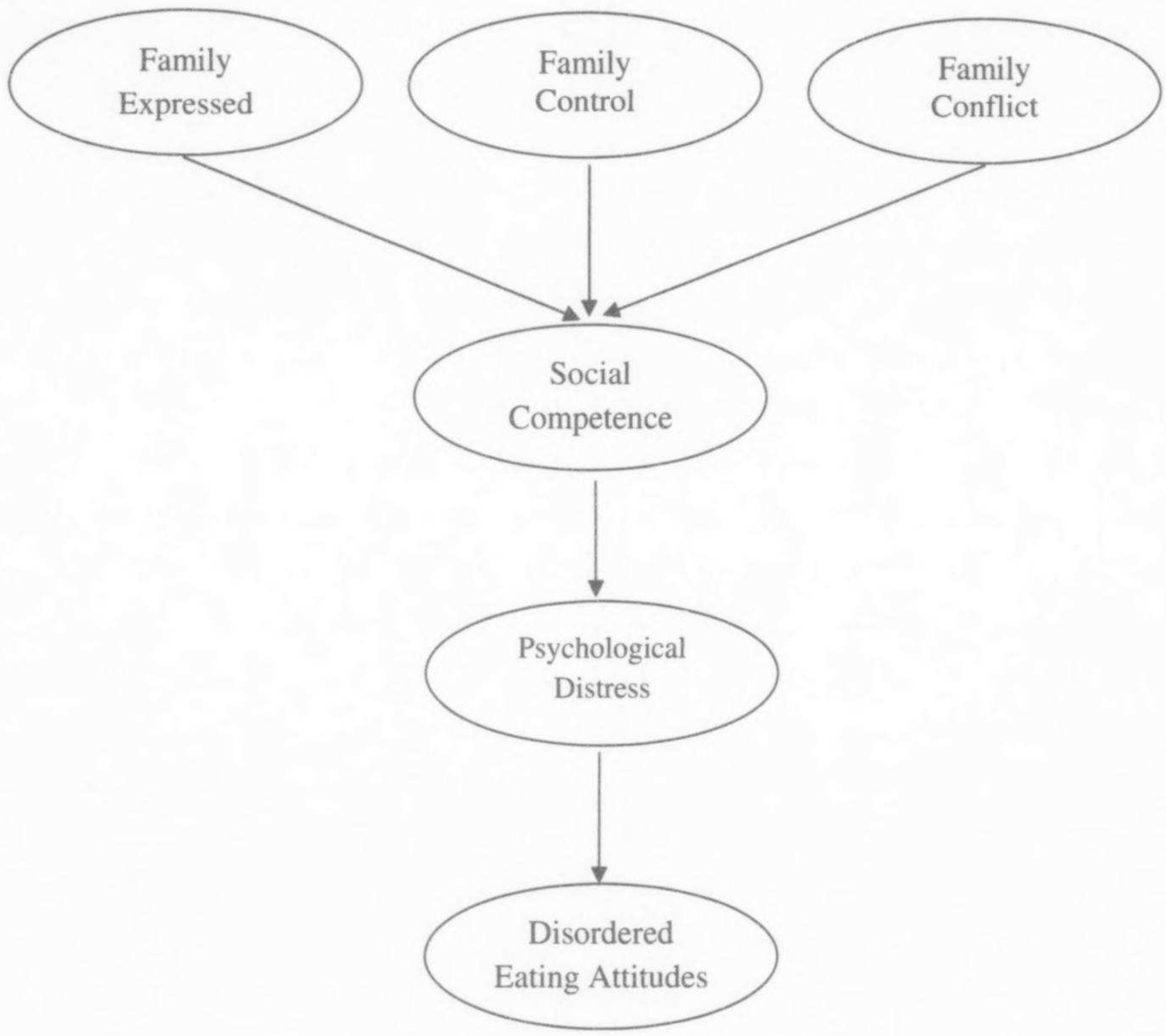

Figure 1 Hypothesized model.

associated with various indicators of psychological distress such as loneliness, depression, and low self-esteem. In turn, the model proposes that disordered eating attitudes are an outcome of family interactions, social competence, and psychological distress. We believe that social competence and psychological distress are key factors in the development of disordered eating attitudes, as disordered eating develops as a compensatory technique for dealing with social incompetence and negative emotions. What follows is a detailed explanation of the specific processes hypothesized in the structural model.

Family Interactions: Conflict, Control, and Expressed Emotion

The model begins by predicting that family interactions set the foundation for the development of social competence, psychological distress, and disordered eating attitudes. We particularly focus on family conflict, family control, and family expressed emotion as key factors that make individuals vulnerable to body-image concerns. First, *family conflict,* conceptualized as the family's typical amount of open aggression and anger (Moos & Moos, 1994), is believed to be expressed in eating disorders (Woodside, Shekter-Wolfson, Garfinkel, & Olmsted, 1995) and has consistently been linked to eating disorders among females (e.g., Byely, Archibald, Graber, & Brooks-Gunn, 2000; Hanna & Bond, 2006). Second, *family control,* characterized by patterns of rigidity and overprotection, is a risk factor for disordered eating as a way for individuals to seek independence and autonomy through control

over eating habits when other means of personal control are corrupted by the family environment (Minuchin, Rosman, & Baker, 1978). Third, *family-expressed emotion* is an extraordinarily pathogenic pattern of criticism, overinvolvement, excessive attention, and emotional reactivity, usually communicated by parents toward their children (Vaughn & Leff, 1976). Family-expressed emotion may be problematic in part because it is associated with high levels of conflict and poorer levels of organization in families of people with eating disorders (Hedlund, Fichter, Quadflieg, & Brandl, 2003). This parental criticism and hyper-involvement appears to promote a struggle for control and self-enhancement that is often expressed in disordered eating. Thus, we propose that these patterns of corrosive family communication patterns impart a risk for disordered eating through diminished social competence and subsequent psychological distress.

The Mediating Roles of Social Competence and Psychological Distress

Next, the model predicts that family interactions are directly associated with social competence, wherein social competence is conceptualized as the ability to achieve personal goals through social interaction while simultaneously maintaining positive relationships with others (Rubin & Rose-Krasnor, 1992). Family interactions and the quality of family relationships are both important for social consequences of the child (e.g., loneliness, maladjustment, bullying; Coplan, Arbeau, & Armer, 2008; Segrin, Nevarez, Arroyo, & Harwood, 2012), as families characterized by coldness, inhibited expression of feelings, and feeling misunderstood by parents are associated with children's lack of intimate and meaningful relationships (Rokach, 1989).

Family interactions help children feel worthy, cared for, and supported (Mallinckrodt et al., 1995); thus, as indicated by family interactions, the model predicts that social competence is a key factor in disordered eating attitudes through psychological distress. Experiencing constant criticism, conflict, and control would not allow family members to feel free to express their thoughts and feelings, nor allow family members to develop the proper skills necessary to build and maintain significant and meaningful relationships. Rather, family members would develop and possess social skills that elicit rejection from others and they would not have the skills necessary to elicit positive reinforcement from others (Coyne, 1976; Lewinsohn, 1974). Because of a lack of social relationships, self-efficacy, and a sense of personal effectiveness, social incompetence is a concomitant of many forms of mental illness such as depression and loneliness (Segrin, 2001). Consequently, the social aspect of relationships and communication and the psychosocial aspect of well-being are intrinsically intertwined (Spitzberg & Cupach, 2011).

Disordered Eating Attitudes

Finally, the model predicts that disordered eating attitudes are associated with psychological distress. The relationship between psychological distress and disordered eating attitudes in females is well documented: low self-esteem and depressive

symptomatology are associated with an idealized body image and low body satisfaction (Grogan, Williams, & Conner, 1996; Thompson & Stice, 2001) and individuals with significant body-image concerns experience higher levels of depression, anxiety, and even suicidality (Dyl, Kittler, Phillips, & Hunt, 2006).

The model also suggests an indirect effect of social competence on disordered eating attitudes through psychological distress. Difficulties in interpersonal relationships are possible risk factors in the development and maintenance of disordered eating and body-image issues (Fairburn, Cooper, & Shafran, 2003). Individuals with body-image issues and disordered eating often struggle with the negotiation of conflict and expression of their feelings (Schutz & Paxton, 2007; Shroff & Thompson, 2006), as well as experience social withdrawal, anxiety in social situations, and fear of negative evaluation (Schutz & Paxton, 2007; Zonnevylle-Bender, Van Goozen, Cohen-Kettenis, Van Elburg, & Van Engeland, 2004). Thus, disordered eating develops as a compensatory technique for dealing with a lack of social competence and the ability to regulate the psychological distress associated with a lack of rewarding social interactions and meaningful relationships (Holm-Denoma & Hankin, 2010) guided by the pathologic belief that weight loss and thinness will enhance the self in eyes of others.

As a result of body-image disturbance, a high proportion of women report engaging in healthy and unhealthy weight control practices in which they purposely attempt to reduce their weight or prevent weight gain (e.g., dieting, exercising; Calogero & Pedrotty, 2004; Williams, Germov, & Young, 2007). Weight-control practices are especially prevalent in eating disordered populations; 33–100% of inpatient eating disorder populations engage in excessive exercising (Davis et al., 1997; Davis, Kennedy, Ravelski, & Dionne, 1994; Katz, 1996). Although there is a clinical distinction between an eating disorder and disordered eating behaviors (Thornton, 1990), the family of problems also exist at a subclinical level and prodromal stage that can mark a substantial risk for onset of the clinical syndrome (Meadows, Palmer, Newball, & Kenrick, 1986). We focus on disordered eating attitudes because it is standard for researchers to "detect tendencies toward eating disorders by measuring indirectly the attitudes of the participants concerning food and self" (Ocker et al., 2007, p. 27); high scores on eating attitudes tests are helpful in screening for patients who are later diagnosed with anorexia nervosa (Meadows et al., 1986). Therefore, investigating disordered eating attitudes in a more general population can provide further insight into novel processes in the domain of family interactions, social competence, and psychological distress in effort to identify possible risk and protective factors in the potential for eating disorders.

Method

Participants

Participants were recruited from undergraduate classes at a large university in the Southwestern United States. Undergraduate students were asked to recruit their

mother and a sibling over the age of 18 to participate in exchange for extra credit in their course ($N = 858$). Students emailed the principal investigator with the name, email address, and sex of their family members, and the appropriate online questionnaires were sent individually to each of the family members. Female students were free to choose either a sister or brother to participate; male students were required to ask a sister to participate so that at least one person in the sibling dyad was a female (specific criteria in regard to step- or adopted siblings were not specified). Students who were only children and male students with only male siblings were offered an alternative extra-credit assignment. In the case of a female student, the student was labeled the female and the male or female sibling was labeled as the sibling. In the case of the male student, the sister was labeled the female and the student was labeled the sibling. In total, we received data from 306 families wherein at least one member successfully completed the questionnaire. However, to avoid problems associated with missing data (Kline, 2005), we removed all cases where fewer than three family members completed the measures. This resulted in a total of 286 family triads, each consisting of a young adult female, a mother, and a sibling.

The mothers had a mean age of 51.34 years ($SD = 4.98$), an average body mass index (BMI) of 24.54 ($SD = 7.24$), and were 76.6% White, 10.8% Latina, 5.6% Asian, 4.5% African-American, 5.6% Native American, and 1.7% other. The females had a mean age of 20.96 years ($SD = 2.49$), an average BMI of 22.54 ($SD = 7.50$), and were 79% White, 9.1% Latina, 5.6% Asian, 3.8% African-American, and 2.4% other. The siblings had a mean age of 21.88 years ($SD = 3.51$), an average BMI of 24.15 ($SD = 7.24$), were 52.1% female and 47.9% male, and were 77.6% White, 9.8% Latina/o, 1.4% Asian, 3.5% African-American, 5.2% Native American, and 2.4% other.

Measures

The measures described subsequently were used to create latent variables. The female completed all measures, and multiple family members completed the family interaction and social competence measures, the specifics of which are discussed next. All items were measured on 5-point Likert scales (1 = *strongly disagree* to 5 = *strongly agree*) unless otherwise indicated. After the appropriate items were reverse-coded (R), items were averaged, with high scores denoting higher levels of the respective variable. Intracorrelations, means, standard deviations, and alphas of all study variables can be found in Table 1.

Family interaction patterns were assessed through family-expressed emotion, family conflict, and family control. *Family-expressed emotion* was measured with Shields, Franks, Harp, McDaniel, and Campbell's (1992) 14-item Family Emotional Involvement and Criticism Scale. This scale consists of two subscales: emotional involvement (e.g., "My family knows what I am feeling most of the time") and perceived criticism (e.g., "My family is always trying to get me to change"). Females' and siblings' ratings of emotional involvement and perceived criticism were used as separate indicators of the family-expressed emotion latent variable. Only the children completed this measure because of the way the questions were framed and because expressed

Table 1 Intracorrelations, means, standard deviations, and alphas of study variables.

	1	2	3	4	5	6	7	8	9	10
Females										
1. Emotional involvement	–									
2. Criticism	−0.38**	–								
3. Conflict	−0.31**	0.38**	–							
4. Control	−0.03	0.30**	0.20**	–						
5. Positive relations	0.38**	−0.49**	−0.35**	−0.10	–					
6. Self-competence	0.32**	−0.41**	−0.29**	−0.10	0.68**	–				
7. Depression	−0.19**	0.36**	0.10**	0.12*	−0.48**	−0.46**	–			
8. Self-esteem	0.35**	−0.50**	−0.30**	−0.13*	0.59**	0.66**	−0.55**	–		
9. Loneliness	−0.26**	0.36**	0.26**	0.18**	−0.70**	−0.54**	0.51**	−0.59**	–	
10. Perceptions of body shape	−0.05	0.24**	0.15*	0.02	−0.18**	−0.15*	0.13*	−0.37**	0.19**	–
11. Dieting	−0.04	0.25**	0.12*	0.11	−0.18**	−0.19**	0.16**	−0.34**	0.21**	0.76**
12. Awareness of food contents	0.06	0.11	−0.12*	0.07	−0.02	−0.04	0.02	−0.05	0.04	0.45**
13. Food preoccupation	−0.02	0.30**	0.24**	0.04	−0.22**	−0.25**	0.24**	−0.43**	0.23**	0.68**
Siblings										
14. Emotional involvement	0.18**	−0.10	−0.04	−0.03	0.03	0.04	0.02	0.06	0.00	0.02
15. Criticism	−0.05	0.15*	0.12	0.02	−0.04	−0.09	0.09	−0.17**	0.06	−0.01
16. Conflict	−0.01	0.07	0.22**	0.00	−0.01	−0.03	0.07	−0.04	0.05	−0.05
17. Control	0.03	0.11	−0.07	0.26**	−0.02	−0.01	0.07	−0.02	0.04	−0.06
18. Sisters' competence	0.07	−0.22**	−0.08	−0.09	0.07	0.07	−0.15**	0.12*	−0.12*	0.02
Mothers										
19. Conflict	−0.12*	0.17**	0.35**	0.12*	−0.16**	−0.13*	0.06	−0.10	0.14*	0.03
20. Control	−0.02	0.02	0.09	0.23**	0.03	0.01	0.09	0.04	0.01	0.04
21. Daughters' competence	0.17**	−0.29**	−0.12*	−0.16**	0.26**	0.19**	−0.09	0.13*	−0.16**	−0.05
Mean	3.70	2.11	2.80	3.00	4.17	4.40	1.35	4.20	1.99	3.25
Standard deviation	0.62	0.73	0.64	0.55	0.68	0.47	0.34	0.70	0.50	1.10
Alpha	0.73	0.80	0.82	0.64	0.85	0.86	0.73	0.89	0.84	0.80

Table 1 *(Continued)*

	11	12	13	14	15	16	17	18	19	20	21
Females											
1. Emotional involvement											
2. Criticism											
3. Conflict											
4. Control											
5. Positive Relations											
6. Self-competence											
7. Depression											
8. Self-esteem											
9. Loneliness											
10. Perceptions of body shape											
11. Dieting	–										
12. Awareness of food contents	0.61**	–									
13. Food preoccupation	0.66**	0.37**	–								
Siblings											
14. Emotional involvement	0.09	0.11	−0.00	–							
15. Criticism	−0.02	−0.05	0.05	−0.33**	–						
16. Conflict	−0.11	−0.14*	−0.01	−0.34**	0.53**	–					
17. Control	−0.03	0.06	−0.04	−0.10	0.31**	0.21**	–				
18. Sisters' competence	0.01	0.01	−0.03	0.33**	−0.37**	−0.38**	−0.02	–			
Mothers											
19. Conflict	−0.03	−0.05	0.01	−0.08	0.12*	0.31**	0.06	−0.19**	–		
20. Control	0.05	0.04	0.02	−0.00	−0.00	0.13*	0.27**	0.03	0.19**	–	
21. Daughters' competence	−0.05	−0.03	0.01	0.06	0.00	−0.10	−0.02	0.243**	−0.39**	−0.07	–
Mean	2.57	2.50	2.45	3.34	2.18	2.43	2.86	4.13	2.22	3.00	4.45
Standard deviation	0.92	0.96	2.04	0.72	0.62	0.78	0.59	0.74	0.63	0.55	0.52
Alpha	0.78	0.79	0.83	0.77	0.75	0.83	0.69	0.83	0.78	0.64	0.87

*$p < 0.05$; **$p < 0.01$.

emotion is usually communicated by parents toward their children (Vaughn & Leff, 1976). *Family conflict* (e.g., "We fight a lot in our family") and *family control* (e.g., "There is a strong emphasis on following rules in our family") were measured with subscales from Moos and Moos' (1994) Family Environment Scale. Both subscales consist of nine items and were completed by the female, mother, and sibling.

Social competence was indicated by females' ratings of positive relations with others, females' self-rated social skills, and mothers' rating of females' social skills (siblings also rated females' social skills; however, they were not included in the final model due to a low factor loading). Females rated their ability to establish *positive relationships with others* using Ryff's (1989) 9-item Positive Relationships with Others Scale (e.g., "Maintaining close relationships has been difficult and frustrating for me" [R]). Females' *self-rated social skills* were measured using 14 items from Cupach and Spitzberg's (1981) Self-rated Competences Scale (e.g., "I am awkward during conversations" [R]). Mothers rated *females' social skills* using Cupach and Spitzberg's (1981) Alter-rated Competences Scale. Mothers completed the same 14 items as their daughter; however, the subject of interest changed (e.g., "She is awkward during conversations" [R]).

Psychological distress was indicated by females' depression, self-esteem, and loneliness. *Depression* was measured with the depression subscale of the Hospital Anxiety and Depression Scale (Zigmond & Snaith, 1983). These seven items were rated on different 4-point Likert scales (e.g., "I feel cheerful" [R]: 1 = *not at all*, 2 = *not often*, 3 = *sometimes*, 4 = *most of the time*). *Self-esteem* was measured using Rosenberg's (1989) 10-item self-esteem scale (e.g., "I take a positive attitude toward myself"). *Loneliness* was measured with an 8-item shortened version of the UCLA Loneliness Scale and was rated on a 4-point Likert scale (Russell, 1996, e.g., "How often do you feel you lack companionship?": 1 = *never*, 2 = *rarely*, 3 = *sometimes*, 4 = *always*).

Disordered eating attitudes were measured with 16 items from the Eating Attitudes Test (Ocker et al., 2007). The original 40-item Eating Attitudes Test (Garner, Olmsted, Bohr, & Garfinkel, 1982) was designed to screen for symptoms of anorexia nervosa in practical and nonclinical settings. Although the Eating Attitudes Test is a popular measure, the scale suffers from inconsistent construct validity (Doninger, Enders, & Burnett, 2005; Koslowsky et al., 1992; Ocker et al., 2007). The inconsistencies may be a result of its construct validity being primarily evaluated with the data-driven exploratory factor analysis approach. To remedy these concerns, Ocker et al. (2007) examined the factor structure using confirmatory factor analysis and found that there are four relevant subscales that can be used to screen for disordered eating. Given the theoretically driven nature of confirmatory factor analysis, we utilized Ocker et al.'s 16-item, 4-factor structure: (1) *self-perceptions of body shape* (e.g., "I am preoccupied with the desire to be thinner"), (2) *dieting* (e.g., "I engage in dieting behavior"), (3) *awareness of food contents* (e.g., "I particularly avoid foods with high carbohydrate content"), and (4) *food preoccupation* (e.g., "I find myself preoccupied with food").

Results

Family-Level Variance

Because the data were collected from members of the same family, it is likely that their responses are correlated. To assess family-level variance, intraclass correlations (ICCs) were computed for variables in which all three participants completed measures using multilevel modeling in the Mixed Models program in SPSS 20.0. The ICC indicates how similar family members are to one another on a given variable, as well as how much variance in a variable is explained by being a part of a specific family (Kenny, Kashy, & Cook, 2006). For variables in which only two participants completed measures, zero-order correlations are appropriate for exploring similarities in family members' responses in the distinguishable case (Kenny et al., 2006). ICCs that are not "sufficiently close" to zero (ICC > 0.05; Hayes, 2006; Kreft & de Leeuw, 1998) and significant zero-order correlations warrant the assumption of nonindependence when analyzing the current data.

Results generally supported the assumption of nonindependence in the data. All three family members completed measures of family conflict and family control. The ICCs for these variables were 0.20 and 0.24, respectively, showing that 20% of the variance explained in family conflict and 24% of the variance explained in family control are explained by family-level variance. Additionally, all family members completed measures of the females' social skills. These results show that there was 12% common variance among family members on females' social skills. Siblings' ratings of females' competence were dropped from the model to obtain adequate model fit, so a correlation between mothers' and females' ratings was obtained and revealed a significant correlation ($r = 0.19$, $p < 0.05$). For family-expressed emotion, females' and siblings' responses on both family criticism ($r = 0.15$) and family emotional involvement ($r = 0.18$) were significantly correlated ($p < 0.05$). Given the assumption of nonindependence apparent in data, it is appropriate to make latent variables using different family member variables (e.g., using female, mother, and sibling to make a "family conflict" latent variable).

Measurement Model

Prior to testing the hypothesized structural model, a measurement model was evaluated for its goodness of fit. The intent behind this model was to assess each construct as a latent variable. The use of latent variables allows for the assessment of certain constructs at the family level (e.g., family conflict) from the perspective of multiple individuals within the family. Further, the analysis of latent variables in structural equation modeling has the added benefit of correcting for measurement error, and therefore more accurately estimating model parameters (Byrne, 2010; Kline, 2005). We had initially intended to include self-, mother-, and sibling reports of young adult females' social competence in the social competence latent variable. However, an initial inspection of the correlation matrix revealed a nonsignificant correlation between siblings' ratings of females' social competence and young adult

females' self-reported competence ($r = 0.07$, *ns*) and females' reports of positive relations with others ($r = 0.07$, *ns*). Because of the low magnitude of these correlations, this observed variable could not be treated as an indicator of the same latent construct as indicated by young adult females' self-rated competence or positive relations with others. Therefore, the variable was dropped from further analyses.

The fit of the measurement model was assessed in AMOS 18.0 using maximum-likelihood estimation. An initial evaluation of the measurement model in Figure 2

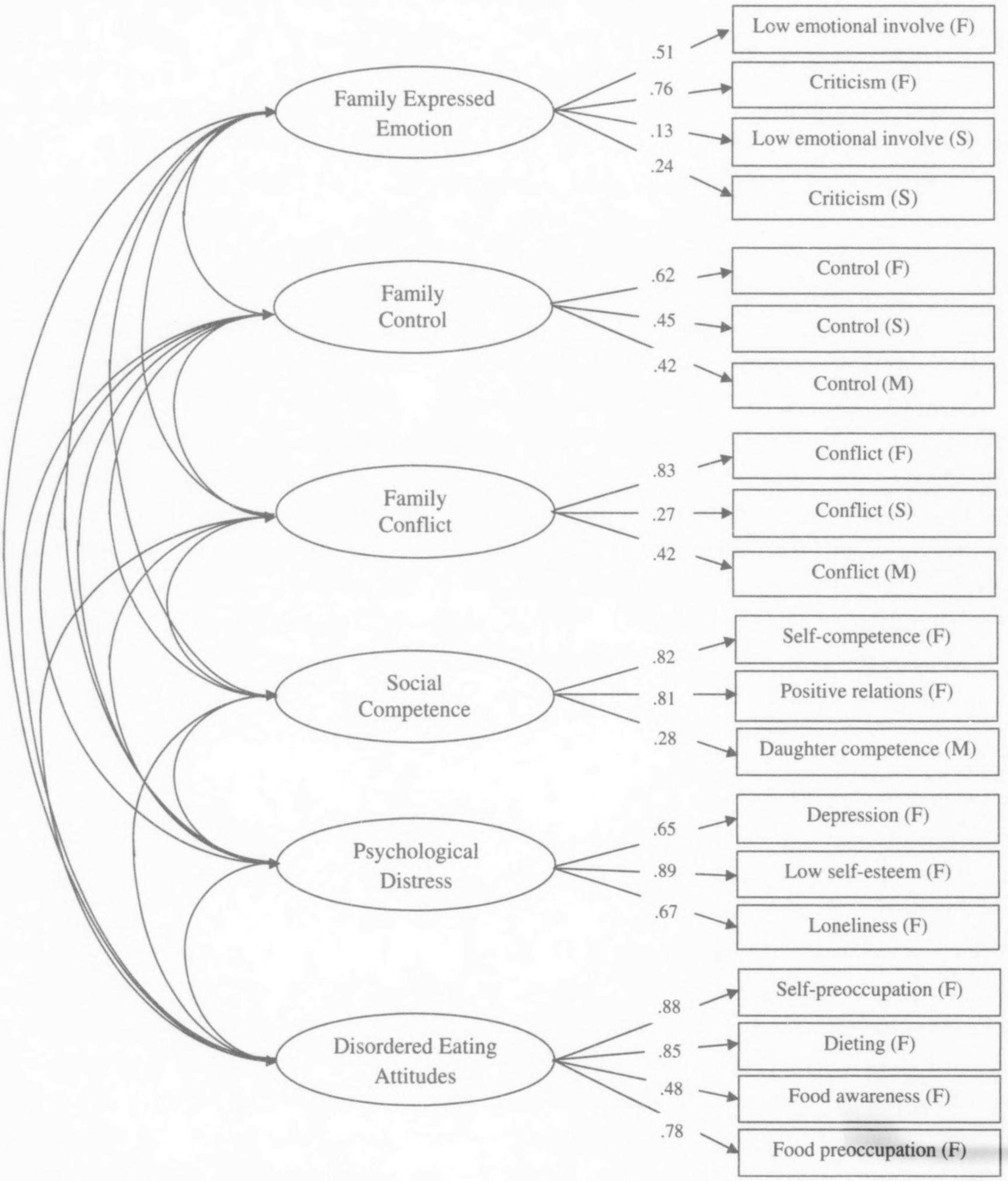

Figure 2 Measurement model.

Note: For ease of presentation, error terms and correlations among latent variables are not depicted. Table values represent standardized regression coefficients. F = young adult female report. S = sibling report. M = mother report.

Table 2 Correlations among latent variables.

	1	2	3	4	5	6
1. Family-expressed emotion	–					
2. Family control	0.35**	–				
3. Family conflict	0.60***	0.26**	–			
4. Social competence	−0.77***	−0.10	−0.45***	–		
5. Psychological distress	0.73***	0.15	0.38***	−0.86***	–	
6. Disordered eating attitudes	0.33***	0.05	0.20**	−0.30***	0.46***	–

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

revealed a less-than-adequate fit to the sample data, $\chi^2 = 556.81$, df = 155, $p < 0.001$, $\chi^2/\text{df} = 3.59$, CFI = 0.80, RMSEA = 0.09 (90% CI = 0.09–0.10). Inspection of modification indices indicated that the fit of the model could be improved substantially through specification of five correlations between the error terms of some of the observed variables. Specifically these were sibling criticism–sibling conflict, sibling criticism–sibling control, mother conflict–mothers' ratings of females' competence, female positive relations–female loneliness, and female dieting–female food awareness. Although error terms should ideally be uncorrelated, specification of these correlations appeared justified in these cases because (1) the two error terms were associated with observed variables that were assessed from a unique family member (e.g., sibling), or (2) the two error terms are associated with variables that are factors of the same latent variable (e.g., disordered eating attitudes). With these specifications in place, the resultant model provided a good fit to the sample data, $\chi^2 = 331.29$, df = 150, $p < 0.001$, $\chi^2/\text{df} = 2.21$, CFI = 0.91, RMSEA = 0.06 (90% CI = 0.05–0.07). For ease of presentation, error terms and correlations among the latent factors are not depicted in Figure 2. Correlations among the latent variables appear in Table 2.

Hypothesized Structural Model

We next tested the hypothesized structural model in AMOS 18.0 using maximum-likelihood estimation, along with a bootstrapping procedure based on 2,000 samples to estimate the standard errors around the indirect effects. This model provided a good fit to the sample data, $\chi^2 = 340.91$, df = 157, $p < 0.001$, $\chi^2/\text{df} = 2.17$, CFI = 0.91, RMSEA = 0.06 (90% CI = 0.05–0.07). The resultant structural model is depicted in Figure 3. Of the three family communication constructs, only family-expressed emotion was a significant predictor of young adult females' social competence ($\beta = -0.88$, $p < 0.001$). Neither the family conflict nor family control variables were significant predictors of young adult females' social competence. The social competence latent variable was strongly associated, in a negative direction, with psychological distress ($\beta = -0.86$, $p < 0.001$). Psychological distress was, in turn, a significant predictor of disordered eating attitudes ($\beta = 0.44$, $p < 0.001$).

A summary of the indirect effects appears in Table 3. Three significant indirect effects emerged from these analyses. First, family-expressed emotion had an indirect

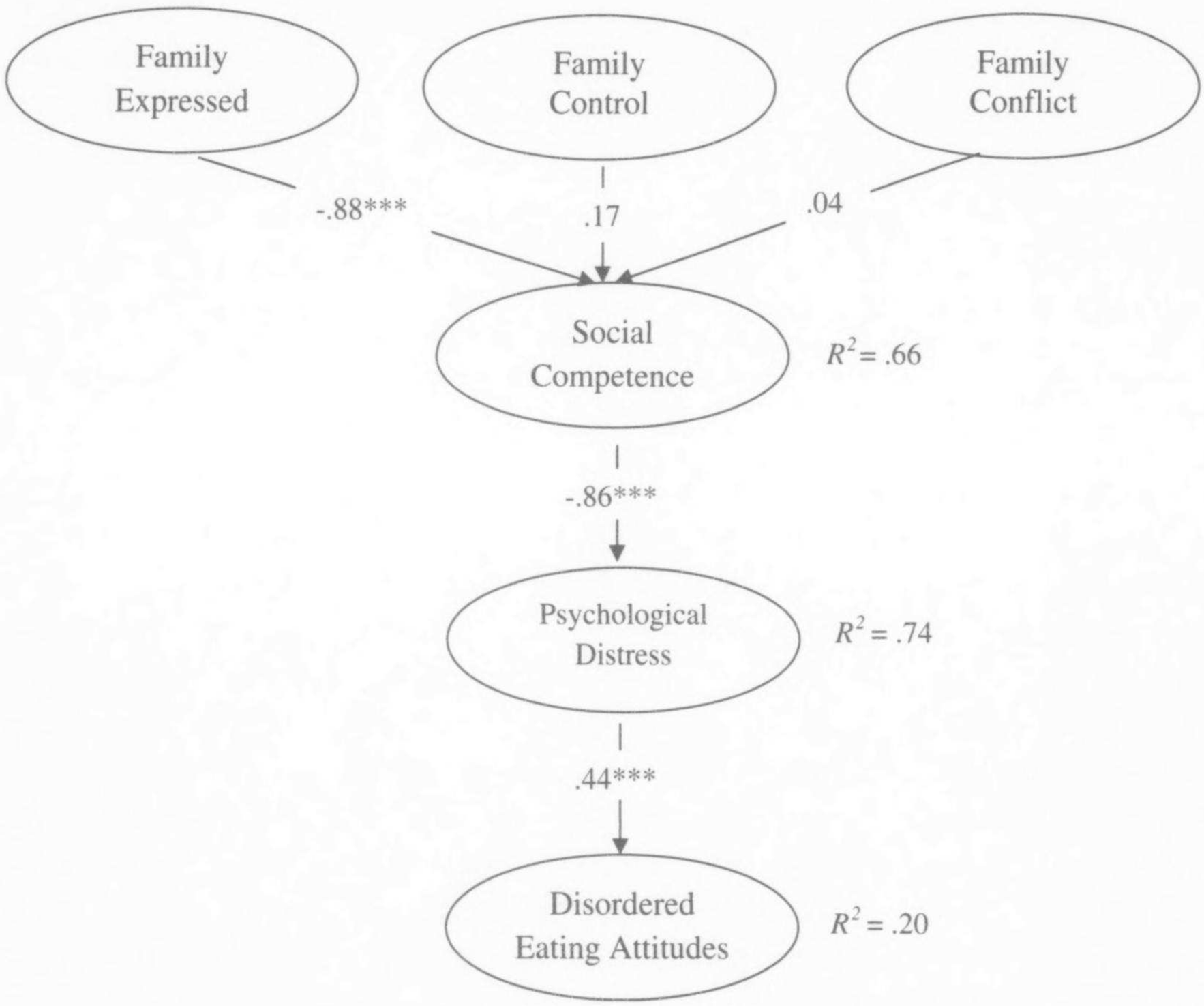

Figure 3 Structural model.

Note: For ease of presentation, error terms and observed variables are not depicted. Table values represent standardized regression coefficients unless otherwise indicated.

Table 3 Tests of indirect effects in structural model.

Effect of IV		Through mediating variable(s)		On DV	*B*	95% CI
Family control	→	Social competence	→	Psychological distress	−0.07	−0.16, 0.05
Family control	→	Social competence, psychological distress	→	Disordered eating attitudes	−0.19	−0.49, 0.14
Family conflict	→	Social competence	→	Psychological distress	−0.01	−0.10, 0.06
Family conflict	→	Social competence, psychological distress	→	Disordered eating attitudes	−0.03	−0.27, 0.16
Family-expressed emotion	→	Social competence	→	Psychological distress	0.34**	0.22, 0.59
Family-expressed emotion	→	Social competence, psychological distress	→	Disordered eating attitudes	−1.00**	−1.68, −0.59
Social competence	→	Psychological distress	→	Disordered eating attitudes	−0.97**	−1.31, −0.64

Note: Table values are unstandardized regression coefficients.
**$p < 0.01$.

effect on young adult females' psychological distress ($B = 0.34$, $p < 0.01$) through their reduced social competence. Second, family-expressed emotion had an indirect effect on young adult females' disordered eating attitudes ($B = -1.00$, $p < 0.01$) through the combination of reduced social competence and increased psychological distress. Finally, young adult females' social competence had an indirect effect on minimizing their disordered eating attitudes ($B = 0.97$, $p < 0.01$) through increased psychological distress.

Discussion

Dysfunctional family interaction patterns can have deleterious effects on disordered eating attitudes and behaviors (e.g., Cooley et al., 2008; Coomber & King, 2008). The current research explored the relationship between family interaction patterns and disordered eating attitudes as mediated by social competence and psychological distress. Data collected from family triads show that certain dysfunctional family interaction patterns, namely family-expressed emotion, were associated with low social competence, social competence was negatively associated with psychological distress, and psychological distress was positively associated with disordered eating attitudes in young adult females. Implications of this study draw attention to corrosive family interactions and inadequate social competence as key factors related to disordered eating attitudes.

Multiple Family Members' Perspectives

Much of the research investigating the association between family interactions and eating disorders is limited to data from the female eating disorder patient herself and sometimes mother–daughter dyads. The restriction of different family members' perspectives produces "in all cases a one-sided (and gender-specific) picture of the family's perspective" (Cook-Darzens et al., 2005, p. 225). In contrast, it has been customary in therapeutic interventions for disordered eating to emphasize the importance of involving multiple family members; this approach that has yielded promising therapeutic techniques in changing family structures and communication as a way of treating eating disorders in patients (e.g., Killian, 1994; Loeb & Le Grange, 2009). For that reason, we obtained perspectives on family communication processes and the young adult female's social competence from multiple family members. In addition to a young adult female, data were gathered from a mother, given the overwhelming evidence of dysfunctional self-perceptions shared between mothers and daughters, and a sibling, given that research investigating family influences tends to neglect siblings and focuses mostly on parents—both of whom could contribute to pathological eating attitudes and self-perceptions in a young adult female (e.g., Al Sabbah et al., 2009; Tsiantas & King, 2001). Results confirmed that family membership explains significant variance in reports of the family interaction variables, indicating the appropriateness of including various family members' perspectives in these assessments, as well as reduces concerns over common method variance.

Therefore, this research offers methodological evidence for the use of family-level data in understanding its pathological effect and potential protective factors in disordered eating.

Family Communication

The current study focused on family interaction variables in establishing the development of social competence, psychological distress, and disordered eating attitudes. The effect of people's upbringing and family interactions on their well-being and communicative abilities is understandable in that the family of origin is the primary context in which children develop effective social skills that are necessary for managing the myriad stressors encountered throughout development (e.g., Burleson & MacGeorge, 2002). Although family conflict and control each figure prominently in the literature on children's psychosocial well-being, neither appeared to be associated with young adult females' social competence. Instead, it was the hyper-involved and overtly critical expressed emotion communication pattern that was directly and negatively related to social competence, and was also indirectly associated with psychological distress and disordered eating attitudes. It appears that this form of pathogenic family communication is particularly damaging to individuals' sense of self and well-being, as it seems to promote a struggle for control and self-enhancement.

These results are consistent with the idea that dysfunctional family interaction variables are associated with diminished social competencies of the family's offspring (Mallinckrodt et al., 1995), which appears to set the stage for psychological distress and disordered eating attitudes. Cheng and Mallinckrodt (2009) argued that a child's sense of self-value and self-image are strongly influenced by messages sent by parents and significant others. Family-expressed emotion consists of intrusive and highly critical comments that, if internalized, could easily diminish a child's sense of self-worth and social competence, as it seems to promote a struggle for control and self-enhancement. In addition to eating disorders, this pathogenic form of communication also puts children at risk for experiencing a range of psychological disorders that include schizophrenia and bipolar disorder (e.g., Kyriacou, Treasure, & Schmidt, 2008; Sullivan & Miklowitz, 2010). Thus, the results of this investigation support family-expressed emotion's status as a toxic family communication behavior.

Social Competence

Significant associations between social competence and psychological distress and psychological distress and disordered eating are each well documented (e.g., Dyl et al., 2006; Segrin, 2001). However, the mediating role of social competence on the family environment–disordered eating relationship and the indirect effect of social competence on disordered eating attitudes have thus far gone unexplored in communication research. Consequently, a distinct aspect of this study was the application of Mallinckrodt et al.'s (1995) model in which diminished social

competence is conceptualized as a key mechanism through which family dynamics influence pathological self-perceptions and eating attitudes. Much of Mallinckrodt et al.'s theorizing centers on how dysfunctional family environments corrupt the attachment process, consequently creating a risk for disordered eating (e.g., Mallinckrodt, 2000, 2001; Mallinckrodt & Wei, 2005). Although we recognize the potential value of attachment theory (Bowlby, 1969) for explaining these findings, especially given that the social competence variable is partly indicated by positive relations with others, our logic centered on more overt family and interpersonal communication processes and their potential to influence psychological distress and disordered eating. Specifically, the model tested in this study specifies an association between family communication processes and the young adult female's communication, wherein possessing effective social skills is associated with positive social consequences and poor social skills are associated with negative outcomes including poor self-esteem, depressive symptoms, and loneliness.

These findings at least suggest that disordered eating could be a result of attempting to enhance social competence and cope with psychological distress. Because Western ideals center on and reward attractiveness and thinness, particularly through media portrayals (Harrison & Fredrickson, 2003; Harrison, Taylor, & Marske, 2006), attractive people are thought to have more positive characteristics, including being perceived as more interesting and sociable than unattractive people (e.g., Eagly, Ashmore, Makhijani, & Longo, 1991; Langlois et al., 2000). This may explain why women attach social benefits to their ideas about weight (Klesges, Mizes, & Klesges, 1987), especially if they consider social competence as a part of their overall self-esteem. Further, disordered eating may provide short-term relief to those with interpersonal difficulties (McFall, Eason, Edmondson, & Treat, 1999) and may also be a maladaptive coping mechanism for social incompetence. Research consistently finds that women with eating disorders employ less effective coping strategies than their counterparts who do not have eating disorders (Koff & Sangani, 1997; Troop, Holbrey, & Treasure, 1998). Women with eating disorders who also have low social competence have been found to engage in self-destructive behaviors in effort to solicit others' concern or support that they otherwise could not get because of low social competence (Garner & Rosen, 1994). Taken together, weight can be seen as and used as a means of enhancing social competence, seeking social support, and coping with psychological distress.

Sociocultural Ideals

In an analysis of disordered eating attitudes, it would be regrettable not to mention the ideals from which women begin to start comparing themselves to and strive for. Researchers interested in the determinants of disordered eating tend to largely focus on sociocultural influences (e.g., Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999) because of the inherent relationship between personal and current social body-image ideals. Sociocultural theories suggest that Western societies emphasize a narrow definition of women's physical attractiveness (Stice & Bearman, 2001;

Thompson et al., 1999), resulting in women's experience of normative discontent with their bodies (Rodin, Silberstein, & Striegel-Moore, 1984) and, in extreme cases, disordered eating and psychological distress (Stice & Bearman, 2001; Thompson et al., 1999).

Sociocultural theorizing tends to largely focus on the impact of broad, distal, social factors on disordered eating attitudes (e.g., media images; Thompson et al., 1999) that are ordinarily viewed as antecedent to disordered eating. For instance, women's bodies in the media are typically thin and almost perfect, with very few portrayals of overweight women (less than 10% women are portrayed as overweight on television; Fouts & Burggraf, 1999; Herbozo, Tantleff-Dunn, Gokee-LaRose, & Thompson, 2004). Such omnipresent media representations of women's appearance and body weight are not accurate of the real world (Greenberg, Eastin, Hofschire, Lachlan, & Brownell, 2003).

However, sociocultural theorizing has been criticized for its lack of explanation in the heterogeneous body-image experiences of women: Despite the abundance of messages portraying unattainable beauty ideals, not *all* women experience dissatisfaction with their bodies. Therefore, in the context of sociocultural pressures and ideals, the current research both informs the extant body-image literature and extends the understanding of sociocultural influences in two ways. First, this research specifies potential communication and psychosocial mechanisms through which influence occurs, as most sociocultural theories do not do so explicitly. Second, this research explores messages reinforced by more immediate sociocultural factors of body dissatisfaction, as researchers have proposed that interpersonal relationships may serve as more proximal factors influencing women's body image (Thompson et al., 1999). Further investigations of the intersections between multiple influences (e.g., families, peers, significant others, media) and communication processes in this arena would be productive.

Practical Application

Results from this study draw attention to family interactions as a key factor related to disordered eating attitudes; thus, it is important to raise parents' awareness of the role that family interactions play in daughters' self-views, social competence, and mental health. It is apparent that weight- and appearance-related communication are problematic for daughters' body image (Kluck, 2010; Neumark-Sztainer et al., 2010), but fortunately research is beginning to uncover more constructive forms of communicating about weight. Dailey and colleagues (Dailey, Richards, & Romo, 2010; Dailey, Romo, & McCracken, 2010; Dailey, Romo, & Thompson, 2011) have utilized confirmation theory to better understand how confirming messages facilitate personal and psychosocial development (e.g., self-esteem and identity strength), as well as promote health behaviors (e.g., weight management; Buber, 1965; Dailey et al., 2011). Confirmation theory says that people's sense of self is shaped by their social interactions and recent applications of confirmation theory have isolated two components of confirmation: *acceptance* (i.e., showing positive regard, warmth,

and attentiveness during interactions) and *challenge* (i.e., pushing the other to achieve a greater potential during interactions). Acceptance is similar to warmth and cohesion within the family, serving as a protective factor against disordered eating; but more than just positive regard, challenge encourages others to think differently about themselves and their behaviors. Parents' utilization of the combination of acceptance and challenge—that is, support messages that focus on daughters' emotions and also induce change—may be a promising and effective communication strategy in discussing weight issues and concerns with their daughters.

Further, one practical way parents can monitor daughters' psychosocial development is by promoting social competence. Parents are the primary agents in the development of their children's social skills (e.g., Arroyo, Nevárez, Segrin, & Harwood, 2012). By employing effective and appropriate social skills themselves (e.g., less conflict), focusing on healthy parent–child relationships (e.g., less criticism, less overprotection), and fostering secure bonds with their children (e.g., less emotional involvement), daughters may be more likely to establish secure relationships that promote positive interactions, the open expression of their emotions, and self-disclosure (Bowlby, 1969; Denham, Zoller, & Couchoud, 1994). Such positive factors encourage greater social competence, wherein social competence may be a protective factor in the development of psychosocial distress and disordered eating attitudes.

Limitations and Future Directions

Limitations of this study point to directions for future research. First, because of the cross-sectional nature of the data, we cannot make causal claims. Social competence may directly and indirectly influence disordered eating attitudes as proposed. However, an alternative model could reasonably specify social incompetence and psychological distress as outcomes of disordered eating attitudes. For example, the secrecy and intense social comparison processes that often accompany eating disorders might cause some people to avoid social interactions with certain peers and family members. Over an extended period of time this could cause an atrophy of social competencies. In general, documenting the reasonable fit of one model does not eliminate the plausibility of other possible models. Because social competence was so strongly associated with family-expressed emotion and psychological distress, we analyzed a more parsimonious version of the structural model omitting social competence. Although the model depicted in Figure 3 exhibited significantly better fit, $\chi^2\Delta = 71.24$, $df = 48$, $p < 0.05$, the model without social competence still exhibited a marginally acceptable fit.

Second, although we were able to include multiple family members' perspectives, this research may still lack a complete picture of family dynamics because it does not include *all* family members. For instance, fathers also play a crucial role in the development of body-image issues (e.g., Al Sabbah et al., 2009; Sanftner, Ryan, & Pierce, 2009) but they were not included in the current study. While it may be methodologically unrealistic to collect data from every single family member, there is undeniable value in further attempts to assess different family members' perspectives.

Third, we decided to only focus on female targets because of the disproportionately high rates of eating disorders among females, but there is increasing evidence of body dissatisfaction issues in males as well (e.g., Grieve & Helmick, 2008; Wiseman & Moradi, 2010). It would be interesting to replicate this study exploring family influences on male targets, as well as exploring comparisons between male and female children within families (i.e., are outcomes for sons and daughters similar or different within families of dysfunctional communication patterns?).

A fourth limitation of this study is that the participants were homogenous in terms of race/ethnicity, age, and educational attainment because this was a sample of university students and their families. This limits the generalizability of these results.

Fifth, although past theorizing suggests that attitudes predict behaviors (Ajzen & Fishbein, 1980; Kallgren & Wood, 1986), it is important to note that our conceptualization and operationalization of disordered eating attitudes does not identify participants with eating disorders, just attitudes related to problematic eating.

Sixth, this study focused on the indirect effects of social competence and the direct effect of psychological distress on disordered eating attitudes. It is important to point out that there are likely other factors that contribute to disordered eating attitudes not measured in this study (e.g., media, peers, significant others, social comparison, internalization of the thin ideal; Striegel-Moore & Bulik, 2007; Thompson et al., 1999). Future research would benefit from incorporating different sociocultural influences, psychological processes, and communication practices in understanding disordered eating attitudes.

Finally, the young adult women in this study were in most cases no longer living at home with their families. It would be important to assess family interactions in families that are currently living together because the implications for daily, ongoing criticism and overinvolvement may be even more problematic and predictive of negative outcomes.

Conclusion

In conclusion, families instill the values, behaviors, and attitudes necessary for the development of healthy and unhealthy self-perceptions and coping strategies. The current study provides further support for the relationship between deleterious family communication patterns and eating disordered attitudes in young adult females, highlighting the pathogenic nature of family-expressed emotion—a variable that has thus far gone largely overlooked in the family communication literature. The documentation of significant indirect effects also provides an explanation of this relationship by incorporating diminished social competence and increased psychological distress as key mechanisms through which disordered eating attitudes may occur. On the positive side, these results indicate that family interactions marked by low levels of expressed emotion are associated with higher social competence in young women that may in turn protect against psychological distress and potentially reduce the risk of maladaptive and disruptive eating attitudes and patterns.

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From Wall Street to Wellington: Protests in an Era of Digital Ubiquity

Shiv Ganesh & Cynthia Stohl

The Occupy movement is said to represent a new generation of post-Seattle protests, driven by social networking, and breaking from organizing practices in previous eras. This study analyzes the Occupy Wellington protest to shed light on the role of protests in an era of digital media ubiquity. Based on the participant observation as well as 76 brief interviews, the study explores how activists used digital media, and examines the broader institutional logics that shaped organizing dynamics at the protest. The analysis discusses digital media saturation and the multiple institutional logics that activists drew from in their organizing, including collective action, connective action, aggregation, and networking. We argue that digital ubiquity marks the onset of a profound hybridity rather than an abrupt change in activist organizing practices.

Keywords: Collective Action; Connective Action; Digital Ubiquity; Aggregation; Networking; Organizing; Social Movements

More than any other communicative phenomenon, protests have become highly visible and iconic representations of the apparent upsurge in contemporary activism. While many scholars and commentators maintain that the 1999 "Battle in Seattle" represents a paradigmatic shift in the global social justice movement (Escobar, 2005), others argue that protests have changed significantly since then, and continue to morph and expand (Earl & Kimport, 2011). The "Arab Spring" anti-authoritarian movements in various parts of the Middle East the 2011 peace protests in Israel, the 2011 widespread agitation in the USA against anti-union legislation, and the 2011–2012 highly visible Occupy movement reflect more than just a continuation of turn of the millennium events. Rather, they are considered representative of a new generation

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of protests, fueled by more diverse and intensive social networking, more diffuse yet focused-issue engagement and more provisional while still durable political goals (Karpf, 2012).

The burgeoning scholarship on protests as a visible manifestation of social movement organizing somewhat obscures the fact that protests have always been crucial for social movements in complex societies (Tarrow, 2005). Communication scholars in particular have long been interested in the relationships among media, protest, and forms and frames of collective action (e.g. Lehman-Wilzig, 1989). Traditionally, studies of protests and media focused on their communicative role in obtaining the material demands of social movements, such as economic equity or civil rights (Kolb, 2007). More recently, DeLuca and colleagues have argued that in a mass mediated world protests are to a greater extent than ever before transformed into powerful image events that serve as visual arguments which shape the construction of social problems and public opinion (Delicath & DeLuca, 2003; Juris, 2008b).

While the proliferation of protests mediated and fueled by digital technologies is, as Gitlin (2012) puts it, an historical novelty, technological monikers such as "Facebook Revolution" run the risk of oversimplifying our understanding of them. By exaggerating their differences from prior generations of protests and casting them as purely digital phenomena, we may miss important nuances, historical continuities, and even the larger significance of the issues themselves. As Morozov (2011) pointedly notes, the fax machine may have accelerated the Soviet Union's fall, but it is not now referred to as a Fax Revolution. It is important, therefore, to pay attention to the broad dynamics of contemporary protests themselves, and not just the technologies that facilitate them.

What has become known as the "Occupy movement" is of special interest in understanding contemporary global social movements, not only because the protests and occupations are recent, but because the movement spread quickly, visibly, and widely. Less than a month later, from the initial protests at Zuccotti Park (now referred to by the Occupy movement as Liberty Square) in New York's financial district on September 17, 2011, the protests encompassed over 900 cities worldwide. The International Day of Occupation on October 15 attracted tens of thousands of protesters globally who occupied the financial centers of large cities, from London to Hong Kong and Tokyo to Cape Town. In the face of its explosive growth, the movement also attracted a great deal of controversy and fascination. Politicians, major newspapers and television commentators criticized the ineffective, vague, unfocused, and incoherent aspects of the actions (Britt & Gelsi, 2011), while others remarked upon the apparently successful leaderless organizing (Pickerill & Krinsky, 2012). The movement's growth, popularity and novelty, then, provides fertile ground for exploring key theoretical developments and tensions in scholarly accounts of digital media and the spread of contemporary protests.

We proceed by charting several theoretical concerns, outlining a perspective on protests as communicative events in an era of digital ubiquity. We then present an

event-ethnographic case study of the Occupy Wellington protest in Aotearoa New Zealand—which has a vibrant tradition of protest—to illuminate these issues. Finally, we consider the implications for understanding protests and activist organizing.

Digital Technologies, Protests, Communicating, and Organizing

Studies of activism permeate the subdisciplines of contemporary communication research, including rhetoric, organizational communication, media studies, cultural studies, public relations, globalization, and development communication studies. While curiosity about the upsurge in frequency and breadth of contemporary protests has sparked much of this inquiry, it has also been cultivated by an abiding interest in issues of ethics, justice, and democracy (Frey, 1998). The communication literature on social justice activism is multi-faceted and diverse, focusing on the symbolic, performative, and constitutive qualities of activist movements (Enck-Wanzer, 2006), networks of power and the growth of global protest (Castells, 2011), obstacles and challenges involved in activist mobilizing (Huesca, 2001; Zoller & Tener, 2010), and a variety of genres and forms of contestation such as culture jamming (Harold, 2004) or activist dialog (Dutta & Pal, 2010).

Communication scholars agree that the socio/temporal space of activism is predicated on the central and emerging mass media of the era. For example, Gandhi's journalistic prowess and the widespread distribution of print media in the early twentieth century helped sow the seeds for and cultivate protests in South Africa and India (Aikat, 2007). When television became a central social institution (DeLuca & Peeples, 2002), scholars argued that the televisual public sphere became "prime real estate in the landscape of public deliberation" (Delicath & DeLuca, 2003, p. 318) and transformed protests into image events.

Not surprisingly, a growing body of work examines activist engagement with contemporary digital media technologies and the consequences of that engagement. Bennett (2003), for instance, argued that digital technologies have enabled a scale shift in activism. Individual activists are able to exercise much more agency, without relying on the resources for awareness, mobilization, and action hitherto provided by larger groups. Pickard (2006a) examined the ability of Independent Media Centers (Indymedia) to cultivate radical democratic practices amongst activist groups. Ganesh and Stohl (2010) examined the multiple ways in which activists engaged with digital technology, and identified their conflicting attitudes toward its use, even as they leveraged it creatively.

These and other studies have established that the widespread diffusion of digital technology into the experiences of activists, the public in general, and protest events themselves is reshaping contemporary collective actions. Downing's (1989) early study of digital technology and activism examined the ways in which email and computerized platforms such as PeaceNet and Econet, had the potential for simultaneously being decentered while allowing centralized coordination. This opened up new possibilities for grassroots organizing, and teledemocracy. Danitz and Strobel (1999) investigated how the open/closed structure of listservs enabled

Burmese activists to communicate often and cheaply with others. More recently Pickard's (2006b) study of Indymedia analyzed the ways in which technology-enabled open publishing (where any reader can easily and cheaply post news stories) promoted radical democracy and coordination amongst activists after its use in the Seattle protests. Bennett and Segerberg's (2011) study of Twitter in two 2009 climate change protests argued that Twitter's hashtagging affordance served as a crosscutting network mechanism, itself working as an organizational agent.

Fisher, Stanley, Berman, and Neff's (2005) work provided a contemporary take on how organizations recruit people to participate in collective actions. They surveyed about 2000 participants in five different European and North American protests just after the turn of the millennium, and coded five information sources through which participants had heard about the protest including: social movement organizations; traditional media; social networks such as friends or family; a website; email, and other sources. They found significant differences between local and nonlocal participation in protests, notably which despite the technological ability for individuals to broker information on their own, organizations were much more responsible for nonlocal participation whereas local participation was highly influenced by participants' unmediated personal networks.

Digital Ubiquity and Contemporary Protests

We suggest that, although useful, the focus of these studies on specific technological artifacts and platforms limits our ability to assess the scope, direction, and magnitude of changes wrought by the ubiquity of digital technologies in the contemporary media landscape. By digital ubiquity, we mean that today's digital technologies are woven finely into the fabric of the social environment in a manner that transcends patterns of use and nonuse (Bimber, Flanagin, & Stohl, 2012). When technologies are ubiquitous, a wide variety of social institutions and practices are organized around them, regardless of whether and how individuals or communities may or may not adopt or use specific technological artifacts in particular ways. Indeed, a central feature of technological ubiquity is that the affordances, i.e. the types of action "technology enables though its design" (Earl & Kimport, 2011, p. 10), are taken for granted and become "unremarkable" (Bimber et al., 2012). It is not so much that ubiquity means that the appropriation and use of technological affordances converge across all individuals and groups but rather that the multi-faceted opportunities associated with digital technologies fade into the background of organizing practices. The affordances of such technologies are implicated in all social practices, just as the conveniences plumbing and electricity afford are merely part of the environment and only considered when they fail.

Thus we suggest that understanding the relationship between emerging communication technologies and protests requires more than analyzing affordances of specific technologies or exploring whether individuals and organizations use particular technological platforms such as Twitter and for what reasons. Rather, we *argue that it is an emerging technological environment, not a particular technology* that has profound implications for contemporary protests. Because processes of digital integration and

change are constant, it is foolhardy to construct theoretical accounts of contemporary protest around specific instantiations of one or more technologies. Our approach both builds upon and diverges from earlier studies of activism that analytically separate digital technologies and platforms and focus on the impact of discrete artifacts.

Two warrants support our assertion that issues of specific technology design and the intentional deployment of individual technologies are no longer the critical issues shaping contemporary protests. First, several studies have shown that technological affordances are appropriated and used in a myriad of ways (DeSanctis & Poole, 1994; Livingstone, 2008), and second, there is an increasingly rapid and seamless integration of information creation, dissemination, and retrieval across multiple platforms and devices (Bimber et al., 2012). As digital technologies become ubiquitous, identifying the source of specific messages or influences of specific technological affordances becomes difficult, if not impossible (Stohl, 2012). A person may follow a link or video from a particular organizational website to Twitter or YouTube, while at the same time receiving the same message from a friend's "re-tweet" or finding it on their facebook page. Knowledge of a particular advocacy effort can be obtained from an organizational website, an independent blog that a potential participant follows, and from reading the daily news. Even a website that might serve as a crowdsourced respository to uncover human rights abuses and facilitate engagement with an issue is highly likely to be embedded in other kinds of digital media and media flows. For example, CGNet Swara, a citizen journalism project in India, enables Dalit and marginalized communities to phone or text social change or justice issues to a number which then circulates and rebroadcasts them on a website that is then in turn recirculated to other more mainstream digital media outlets (Mudaliar, Donner, & Thies, 2012).

If we integrate the consequences of ubiquity with Jackson's (2007) observation that as digitization increases, communication itself becomes more fluid and promiscuous, moving rapidly, indiscriminately and porously across technological boundaries, the ability to assess the impact of specific affordances and sources of information is called into question. It is doubtful whether the ubiquitous digital environment would permit the same clear conclusions Fisher et al.'s (2005) study presented about information sources and their impact on participation in protests. Now it is more likely that digital media would cut across all five sources identified in that study, raising provocative questions regarding past findings on digital media use in protests. Our first research question therefore addresses a basic issue that has been the focus of much contemporary protest research: *How did participants obtain information about the Occupy Wellington protest?*

Organizing Logics in Digital Environments

While questions of activist's digital media use are important, they continue to relate to first and second order media effects (Malone & Rockart, 1991) such as how digital media might substitute for traditional media in obtaining protest participation—a first order effect—or how digital media such as Twitter might be innovatively appropriated as activist organizing tools—a second order effect. In an era of digital

ubiquity, however, it is also crucial to ask broader third-order questions about media's ability to generate new structures for activist practice. We do this by unpacking the institutional logics that underlie protest participation.

The concept of institutional logics entered organizational studies in Friedland and Alford's (1991) influential essay, which positioned them as belief systems that sustain different types of social relations (also see Lammers, 2011). Institutional logics are implicated in the fabric, tone, direction, motives, and activities of organizing. In the context of activism in the digital age, scholars have discussed how logics of contemporary collective action might differ from those of previous eras by (1) distinguishing between organization-centric logics of collective action versus organization-less connective action; and (2) identifying an emerging logic of aggregation distinct from extant logics of activist networking.

Collective action vs. connective action. Bennett and Segerberg's (2012) work identified two major logics behind contentious politics and protests. The first is a traditional *logic of collective action*, which involves coordinated protest activities by already established activist groups. In such networks, central organizations largely negotiate, broker and control movement goals, connections between participants and the communicative frames for protests. Consequently, organizational identities tend to strongly define these protests. In sharp contrast, Bennett and Segerberg (2012) suggested an emerging digital *logic of connective action*, where conventionally-structured activist organizations' involvement appears to be light or absent, and highly decentralized digital networks themselves take on the functions of organizations. Thus, this logic "does not require strong organizational control or the symbolic construction of a united 'we' (p. 748)." Protests characterized by the logic of connective action, they offer, tend to feature individuals who are immersed extensively in digital media, connected through thin ties enmeshed in large-scale, fluid, changing more impersonal digital networks. Bennett and Segerberg posited two distinct kinds of large scale protest networks that are based on the logic of connective action and digitally networked action. The first is a *self-organizing network*, which features little or no coordination by established organizations; the second is an *organizationally enabled network*, where organizations help coordinate action and provide technology, but whose identities are not salient in the performance of the protest.

For Bennett and Segerberg (2011), personalized action frames where individuals give highly personal and immediate meanings to large and ambiguous collective goals are a core communicative component of digitally networked action:

> In place of the initial collective action problem of getting the individual to contribute, the starting point of connective action is the self-motivated (though not necessarily self-centered) sharing of already internalized or personalized ideas, plans, images, and resources with networks of others. (Bennett & Segerberg, 2012, p. 753)

Some scholarship on social movement framing echoes this distinction between logics of collective action and logics of connective action. Early work owes much to Snow,

Rochford, Worden, and Benford (1986) who understood collective action frames for social movements as intentionally constructed by social movement organizations (SMOs) through media representations. The success of an organizational frame, they argued, depended on the active interpretation of those audiences for whom the frame is designed, and more specifically, on whether or not actors engaged in frame alignment with the broader collective action frame.

However, frame alignment does not mean that audiences passively rehearse the messages that central SMOs provide to them. As scholars such as Gamson (1992) showed, the construction and spread of collective action frames for social movement organizing have always been personalized differently, contested, adapted, and transformed by a range of movement participants. Recently, work on framing has turned to chaos and complexity theories to argue that the increasingly volatile digital environment results in SMOs being unable to unilaterally construct or control master frames for protests. Chesters and Welsh (2004) go further, suggesting that "the rise of globally interacting, highly mobile social movements contesting globalizing patterns of production, distribution and exchange has been precipitated by actors (networks, organizations, and individuals) that do not resemble SMOs typical of the 1970s and 1980s movement milieu" (p. 315). Framing processes have become more chaotic and complex as single or central organizations lose control of the ability to specifically define movement frames. Consequently, they maintained that scholars need to trace how contemporary movements develop multiple frames at micro (individual) and meso (small collective) levels, and how these potentially disrupt, interact with or displace broader, macro-level global movement frames. Bennett and Segerberg's (2011, 2012) work on personal action frames is also located within this turn to complexity in studies of framing processes. They argue that personal action framing is part of a larger process of individualization in late modern societies where "individualized orientations result in engagement with politics as an expression of personal hopes, lifestyles, and grievances" (2012, p. 743). Institutional loyalty and organizational identification are no longer seen as salient factors in political orientation.

Logics of networking and logics of aggregation. Juris's (2008a, 2012) work also contributes understanding to how broad institutional logics affect the dynamics of contemporary protests but unlike Bennett and Segerberg (2011, 2012), he does not make the strong bifurcation between organizationally enabled and individually enabled (self-organizing) collective action. Juris attributes the upsurge in contemporary activism over the last decade to the emergence of a *logic of networking* that guides activists' organizing practices, and which is historically continuous with the emergence of informational capitalism and the beginnings of digitization over the last 50 years. The proposition that networking is a central logic of informational capitalism can be traced back to Manuel Castells' (1996a) work, among others, on the network society, which shows how social and economic practices are heavily dependent on the digital circulation of information. Such informationalism gives

rise to a networking logic which sees increased connectivity as both socially desirable and a source of economic value (Castells, 2009). Networking logics can take the form of informational domination; conversely, they can also be decentralized and subversive of capitalism itself. Castells (1996b) describes these subversive logics as a "networking, decentered form of organization and intervention, characteristic of the new social movements, mirroring, and counteracting, the networking logic of domination in the information society"(p. 367).

Juris (2008a) argued that networking among global justice activists is an important organizing ideal or cultural logic in global social justice, "a mode of organizing involving horizontal coordination among formal organizations and autonomous groups, grassroots participation, consensus decision-making, and the free and open exchange of information." (Juris, 2008a, p. 14). Rendering networking logic in the form of what we might call a coordination, consensus and exchange (CCE) model of practice is also evident in the work of other social movement scholars such as Routledge (2003) or Dempsey, Parker, and Krone (2011).

Juris (2012), however, argues that while logics of networking remain significant in activist practice, we now also see a newer logic of aggregation, "which involves the assembling of masses of individuals from diverse backgrounds within physical spaces" (p. 260). While logics of networking operate and are manifest among already constituted organizational agents and network-based organizational forms, logics of aggregation are based on the "viral flow of information" (p. 266), involving "the coming together of actors qua individuals" (p. 266).

While in some ways networking logics resemble Bennett and Segerberg's (2012) organization-centric view of collective action, they are not coterminous. First, networking is not pre-digital, unlike Bennett and Segerberg's conception of collective action. Second, networking logics are based on interorganizational collaboration rather than singular organizational control and premised on horizontal coordination rather than hierarchy. For Juris (2008a, 2012), early alter-globalization movements are quintessential representations of the logic of networking. The World Social Forum just after the turn of the millennium, for example, was a network of diverse civil society organizations ranging from formal protest groups such as the French Association for the Taxation of Financial Transactions for the Aid of Citizens (ATTAC), the Brazilian Workers Party, the Indian Karnataka State Farmers' Association (KRRS) to US politician Ralph Nader's advocacy group, Public Citizen.

Likewise, while the logic of aggregation is in some respects aligned with Bennett and Segerberg's (2012) account of the logic of connective action, aggregation is an explicitly spatial logic which emphasizes the production of physical and social space as an organizing outcome. Aggregation is grounded in the idea that location matters and materiality is important. Quintessential representations of the logic of aggregation that have produced people in physical spaces are considered to include not only flash mobs, but also the crowds of recent protests such as Occupy, or the 20011 Spanish *acampadas* or campouts (Juris, 2012). For Juris, *logics of aggregation sit alongside logics of networking in activist practice, without necessarily replacing them.*

The immediate question for our understanding of digital ubiquity that arises from these various institutional logics is whether newer logics of connectivity and aggregation replace older logics of collective action and networking in protest events: Bennett and Segerberg's (2012) and Juris's (2012) work indicates that this might be the case. Studies such as Ganesh and Stohl's (2010), however, do remind us that enduring relationships embodied in organizational identities continue to matter in contemporary activist practice. Activists continue to seek opportunities for face to face organizing to build strong and thick ties, and achieve connectivity in the form of durable interorganizational and personal relationships and coordinated strategies. Such ties, as Zoller and Tener (2010) argue, are often a prerequisite for engaging with the powerful corporate or state interests that they challenge. Further, some critics (Gladwell, 2010) have questioned the power and durability of connective action through thin ties, arguing that they lack the ability of older, more conventional forms of collective action to mobilize resources and people for the long term.

Taken together, the body of work on emerging institutional logics raises some interesting theoretical questions about protests in digitally ubiquitous environments: Are old logics of collective action entirely replaced by newer logics of connective action? Are contemporary protests always characterized by dichotomous personal micro-frames and ambiguous macro-frames as a byproduct of digital affordances? How do logics of networking and aggregation coexist and interact in contemporary protests? To address these issues, our second research question asks: *What institutional logics were evident in the Occupy Well ington protests?*

Methods

The Occupy Wall Street movement reached public consciousness just after the 10th anniversary of the September 11 attacks on the United States, in the same city that bore the brunt of those attacks. While the movement was officially leaderless, and no single group or person claimed ownership for it, several groups of people coordinated informally and loosely to create the movement. One key group, for instance, was the Canadian culture-jamming group Adbusters, which drew inspiration from the popular occupation of Tahrir Square in Cairo and advocated that activists in New York do the same in Wall Street to protest both the perpetrators of the financial meltdown as well as the Obama administration's unwillingness to act decisively against them. Another influential group was the internet-based, anarchist-influenced group, *Anonymous*, whose members are neither known to each other in person, nor to the public, and who are an archetypal clandestine organization.

The movement rapidly spread worldwide, facilitated by digital networks including Facebook, blogs, the website Occupytogether.org as well as increasing coverage in newspapers, television, news radio, and talk radio. The initial occupation yielded some iconic visual and verbal frames, including the famous "We are the 99 percent" slogan that spread quickly after an activist created a tumblr page for it in August 2011. (http://wearethe99percent.tumblr.com). The word "Occupy" itself along with a host of other symbols, some appropriated from elsewhere, also came to be associated

with the Occupy movement. This included the "R*evol*ution" logo, with love spelled backward, which the libertarian Ron Paul popularized during his 2008 bid for the Republication US presidency nomination.

When organizers on Occupytogether.org announced an International Day of Action for October 15 2011, the response was immediate in hundreds of cities and towns all around the world. In Aotearoa New Zealand, Auckland-based activists were quick to respond, and early discussions occurred both on the Occupy website as well as on Facebook in late September. In contrast, only a few people discussed the Wellington and Christchurch occupations a week before October 15, and plans were only announced and actively discussed online about three days before the actual protest. Various media outlets reported that over 500 people confirmed on Facebook that they would attend protests in Wellington and Christchurch. Over 300 attended the first day of protests in Wellington, with more following in subsequent days, making it a moderate-sized protest.

This analysis of what became known as Occupy Wellington (or Occupy Welly) took the form of an event ethnography. Event ethnographies have a long history in communication inquiry, and are associated with speech code and performance traditions (Hymes, 1964). The method has been used in multiple disciplines since the 1970s, including social movement studies which has developed various methods of protest event analyses such as ethnographic observation and interviewing methods (Klandermans & Staggenborg, 2002). In recent years qualitative studies of protest events have steadily increased (Oliver, Cadena-Roa, & Strawn, 2003). Scholars such as Hertog and Mcleod (2001) prefer ethnographic approaches for studying frames at protest events, as they usefully combine interviews with field notes and observations.

Our approach followed that of Emerson, Fretz, and Shaw (1995): one author assumed the role of active participant observer, interacting with participants and taking part in the event while acknowledging that his presence would inevitably affect the proceedings. Accordingly, descriptive analyses are written in the first person. In line with Hertog and McLeod's (2001) observation that time at protests is at a premium, allowing researchers just a few minutes for interviewing, only two questions were prepared for participants. The first was: "How did you hear about this protest?" and the second was "What does the theme of this protest mean to you?" The two frames that were to serve as prompts for this question were "Occupy" and "99 percent." The method changed very quickly once the on-site author began talking with people at the protest, as is evident from the extract below.

Extract one

> *As she speaks, more and more people start showing up. I have spoken with exactly three people so far. My first question to a protester was interpreted as "What are you doing here?" and did not go down particularly well. Then I see a man waving a sign that says "No more usury, corruption and greed!" and I go up to him, and on the spur of the moment, ask: "Did you make that sign?" He answers, and I ask him if I can photograph it. I turn on the voice memo on my iPhone and ask him whether he would mind telling me what that sign means. As he talks to me in detail about the sign, how*

> *he made it, and why and how he got here, I realize that this is a more specific and richer way of asking questions and evoking responses. I try out the approach with three more people, discovering that talking about a specific artifact at the event is an immensely interesting way of engaging with strangers.*

Engaging people by asking them about their signs was an inviting and personalizing interview process. Moreover, since signs themselves serve as protest frames, the interviews generated very specific insight into how individuals were constructing frames around issues. By the end of the evening, after spending close to six hours at the protest, over 76 interviews had been conducted and even more photographs taken. Most interviews were recorded on the on-site author's iPhone and voice memos were made about the rest. In the days that followed, we compiled photographs into a table and transcribed quotes from participants.

Interview analysis proceeded thematically. While the project's theoretical goals of exploring issues of digital ubiquity in activist practice remained constant, the specific research questions emerged as a result of thematic engagement with the data and subsequent re-engagement with the theoretical framework. To address the first research question (*How did participants obtain information about the Occupy Wellington protest?)*, both authors examined participant responses to the question "How did you hear about the protest" (asked in the same manner as Fisher et al.'s (2005) study), ascertaining whether they cited multiple sources, and the specificity of their responses. To address the second question (*What institutional logics were evident in the Occupy Wellington protests?)*, both authors paid close attention to text from signs and placards to see whether the frames were original, appropriations of more global frames related to the Occupy movement, or something else. Analyses of the participants' explanations of their signs explored whether activists' explanations highlighted local or global issues or both.

The on-site author also made voice memos of the event as it proceeded, accompanied by handwritten observations which were expanded the next day in order to aid recall. The analysis of these observations was far less structured than the interview analysis and took the form of a careful chronological arrangement of the observations. As per ethnographic convention, the on-site author produced extended first-person narratives or "ethnographic fictions" based on those notes (Emerson et al., 1995), extracts of which are reproduced in this paper to illustrate the analysis.

Digital Media at Occupy Wellington

As suggested above, previous studies of how participants heard about protests have often made categorical differentiations between media types, whether it be mass media versus e-media (Bennett, Breunig, & Givens, 2008) or interpersonal networks versus media sources (Fisher et al., 2005). Our participants' responses to the question "How did you hear about this protest?" show that these distinctions are highly complicated in a digital milieu. Digital media were ubiquitous in the protest in two ways. First, participants spoke about digital media in multiple terms, and even their personal relationships and networks were intertwined with multiple digital media.

Second, participants struggled to identify discrete sources of information about the protest, signaling the omnipresence of digital media.

The most commonly cited digital platform was Facebook. For instance, one person said: "I have been following the Live stream as well as the Occupy NZ movement on Facebook and was bummed when I saw all the organizing for Occupy Auckland, but there was nothing happening in Wellington. Then all of a sudden the Occupy Wellington page took off." Other frequently mentioned sources for the protest included the websites occupywallst.org and occupytogether.org, Youtube and Twitter.

Yet despite Facebook being the most commonly cited technological platform, it was rarely mentioned independent of other media. Participants cited multiple media sources for protest information; only two participants did not mention any media, and none mentioned conventional media, despite widespread print and television coverage of the protest. A few mentioned posters that some activists had pasted on billboards in nearby Cuba Street. Typical of the responses were: "I heard about this through, you know, Youtube and Facebook and the Website," and: "From everywhere, mate. From the places that matter, even though the [mainstream] media tried to squash it. From the Occupy site, from Facebook, from the feed . . . it was everywhere."

Participants clearly recognized that messages about the movement did not come from one particular person or organization and were not confined to specific digital media. The messages were, in Jackson's (2007) terms, promiscuous, making it difficult to identify discrete sources of information. As two young women aptly noted, messages about the Occupy movement were moving seamlessly between specific platforms and sources, coming "from everywhere." "The messages jumped across really quickly, and because you were following, then you would naturally know what was happening here." One participant attributed this to an intentional and collective strategy:

> The Welly FB page is up and running, but I have been following this from the start. It's fantastic that activists were able to harness all these media together- to put videos on Youtube onto the Occupy Website, and feed that into Twitter and Facebook. It's been really effective, and has really pushed the movement globally. Part of the reason that mainstream media are so negative about the Occupy movement is because they have been unable to dominate how people receive information about it.

Importantly, participants presented their personal relationships and networks as also being entangled with and enabled by digital media. For some, this took the form of broad references to their networks—one participant said that he had heard about the protest "through my networks, Facebook, the live stream." Others presented friends as sources of information: "I heard about it through a friend [who] posted the announcement on Facebook and I saw it." Another, pointing to her friend said: "I think she texted me . . . or emailed me, I'm not sure." Yet another participant, talking about the live feed from the Occupy movement, pointed to his companion and said "He's been following it and as soon as he told me about it then I followed it as well."

The uncertainty evident in some participant responses provides further confirmation of digital ubiquity. Several protest participants paused before responding to the

straightforward question "How did you hear about the protest?" and replied only after some hesitation. It was clearly difficult for them to identify a single source of information. Rather, they made broad references to "social media." One participant, for example, said: "From my networks—it spread real quick, aye, with today's social media and all that, you can organize a protest in just a few hours." Another participant also answered vaguely, saying "From Facebook, Youtube and all that." Still others struggled to mention specific sources. One said: "Just here and there, really. It happened really quickly. Um.. Indymedia?" These broad and vague references to "networks," "digital media," and "all that" highlight how difficult it was for participants to pin down one specific source of protest information, and illustrate that they experience digital media much more as a communication flow rather than as a specific set of messages from discrete sources.

Digital media were thus an organic part of Occupy Wellington. Many participants themselves served as digital recorders, intermediaries, and participants, tweeting the day's events, rebroadcasting tweets from other Occupy protests, uploading protest photos onto Facebook and posting photos from other protests in Aotearoa New Zealand and elsewhere, updating blogs, watching and circulating videos on Youtube and texting and talking on mobile phones. In this way, the protest was caught up in a global digital flow of communication that swirled around the Occupy movement on the international day of protest. Anonymous, the clandestine group that helped organize this event, as it did elsewhere, also worked digitally and globally through their masked members (which ironically identified them). The manifest immersion of protest participants in digital media could easily lead to the conclusion that the Occupy Wellington protest represented a sharp break from previous generations' protest organizing practices in Aotearoa New Zealand. Below, we explore whether this was in fact the case.

Institutional Logics at Occupy Wellington

Given the seamless flow of messages across multiple platforms and participants' inability to identify and differentiate among specific sources of information, it is virtually impossible to study the effect of specific digital platforms. Instead, we examine broader third-order effects through the institutional logics underpinning the protest. To derive a more thorough understanding of what protests look like in the contemporary media environment, we explore how logics of collective action, connective action, aggregation and networking remained separate or worked together in the ebb and flow of activist organizing that day.

Protest Frames

We can track institutional logics of collective and connective action by examining how protestors personalized, appropriated, generated, or utilized frames for the protest. This yields detailed insight into frame diversity, the nature of frame alignment, and emergent collective dynamics in framing. At Occupy Wellington, framing was distributed along a

broad continuum: Some participants saw the protest in very unique ways, using their own ideas and language, and explaining the protest's meaning and the justice issues at stake in very local terms. Many others whose signs used idiosyncratic language and frames made connections between local issues and the economic justice concerns of the Occupy movement. Still others carried signs that appropriated or reproduced global frames in the form of slogans associated with the worldwide movement, but then localized the frames, discussing in detail how global issues were relevant to Aotearoa New Zealand or vice versa. And finally, a few, but not very many, used the movement's slogans to talk solely about global issues rather than local ones.

One placard (ref. Figure 1) developed an original frame in the form of a slogan that read: "How to vote out New Zealand's Inside Jobbers." Ruth, who was carrying the sign, said:

> I made this. Public protests like this is (sic) the way we should get the government out of power. Because no one is paying attention to anything but Rugby and the media will not report on how all the jobs are going to the boys. The Earthquake commission is receiving a fortune while Christchurch is basically being ignored.

Here, the sign and the protest are interpreted as a way to place attention onto issues of national significance, to wit, ongoing controversy over the panel appointed to review decisions made under the Canterbury Earthquake Recovery Act passed after the September 2010 and February 2011 earthquakes. Several other participants created signs that were original, but explained these frames by making specific connections among particular justice issues in Aotearoa New Zealand and the concerns of the broader movement. One participant, whose sign read "No more usury, corruption and greed" (ref. Figure 2) explained his slogan as a reaction to

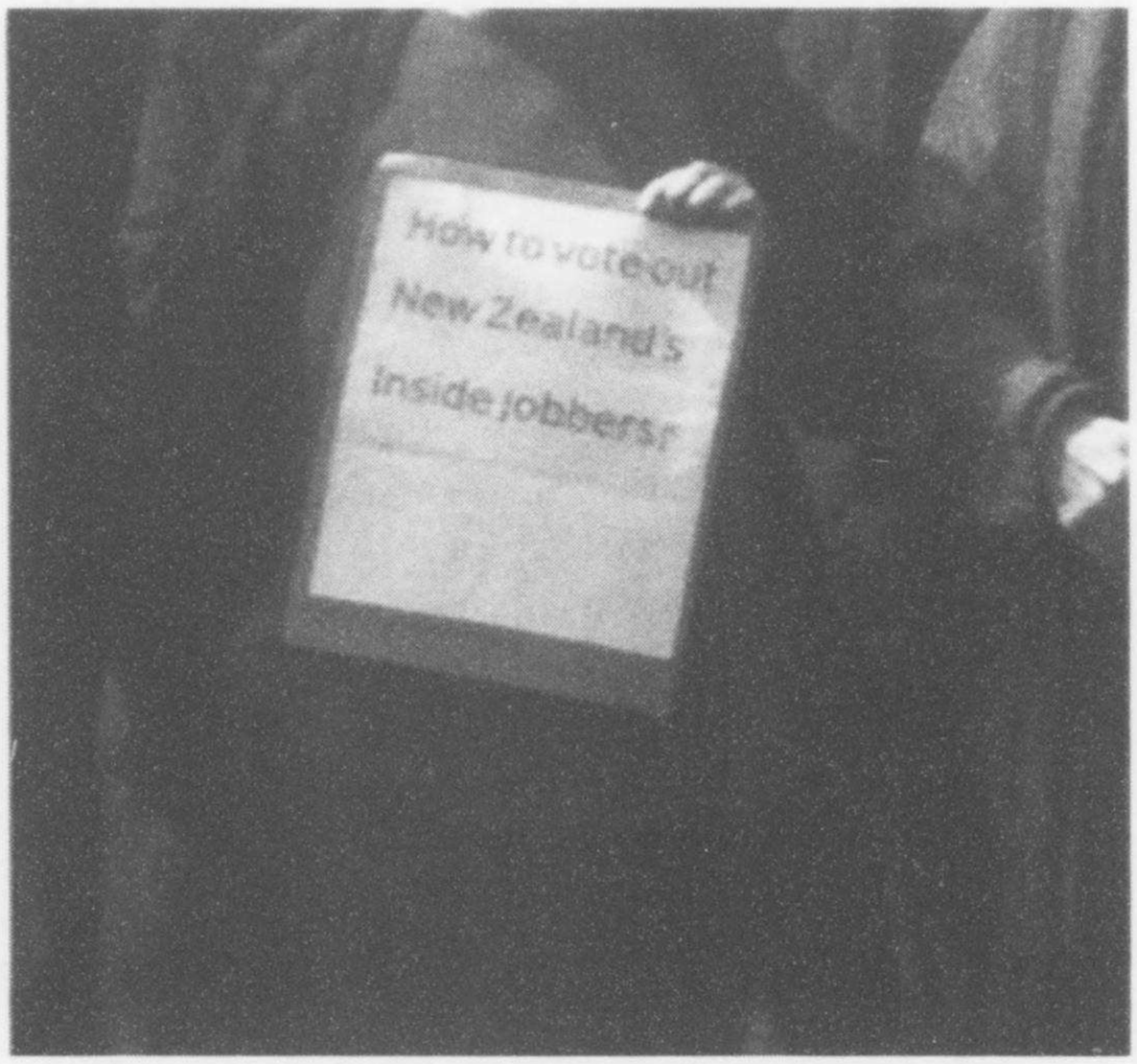

Figure 1 Inside jobbers.

Finance Minister Bill English's 1.6 billion dollar bailout of the failed South Canterbury Finance company in 2010:

> I only want to talk about this one, which I made. Bailouts are not just in America. Do you know you and I both paid 400 dollars each to bail out South Canterbury Finance? This ain't a global issue, mate. It is about Bill English and his mates.

Sometimes, participants appropriated the global frames of the broader movement to spotlight significant issues in Aotearoa New Zealand. This often took the form of direct verbal and textual reproduction. The most common of these involved variants of "we are the 99%" but other frames were also evident. One protestor, who carried a sign saying "Stop Fracking The Earth" (ref. Figure 3) said:

> I saw this on Occupy Wall Street and thought it was a great message for us. We have just demonstrated that we do not know how to manage an oil spill, and yet the government continues to plot with foreign, especially Australian, companies that are drilling . . . here.

Other nationally significant issues that protestors connected to the Occupy movement included the Pike River mine disaster that killed 29 miners in late 2010. Finally, some protesters created signs that used the broader movement's language and imagery to emphasize the protest's global significance. One protestor interpreted her sign (ref. Figure 4), which read " 99% > 1% " to mean:

> It's a symbol of the idea that the 99 percent are more powerful than the 1 percent, and that people are more important than profit. That's the fundamental idea behind the global day of protests, and it applies everywhere . . .

In other instances, the appropriation of the larger frame was embedded in creative cultural and historical representations and interpretations. One protester who had just finished speaking, watched a banner being unfurled on a bridge that read "Me Noho Tahi Tena Pea Ka Tika" and interpreted it as a call for solidarity:

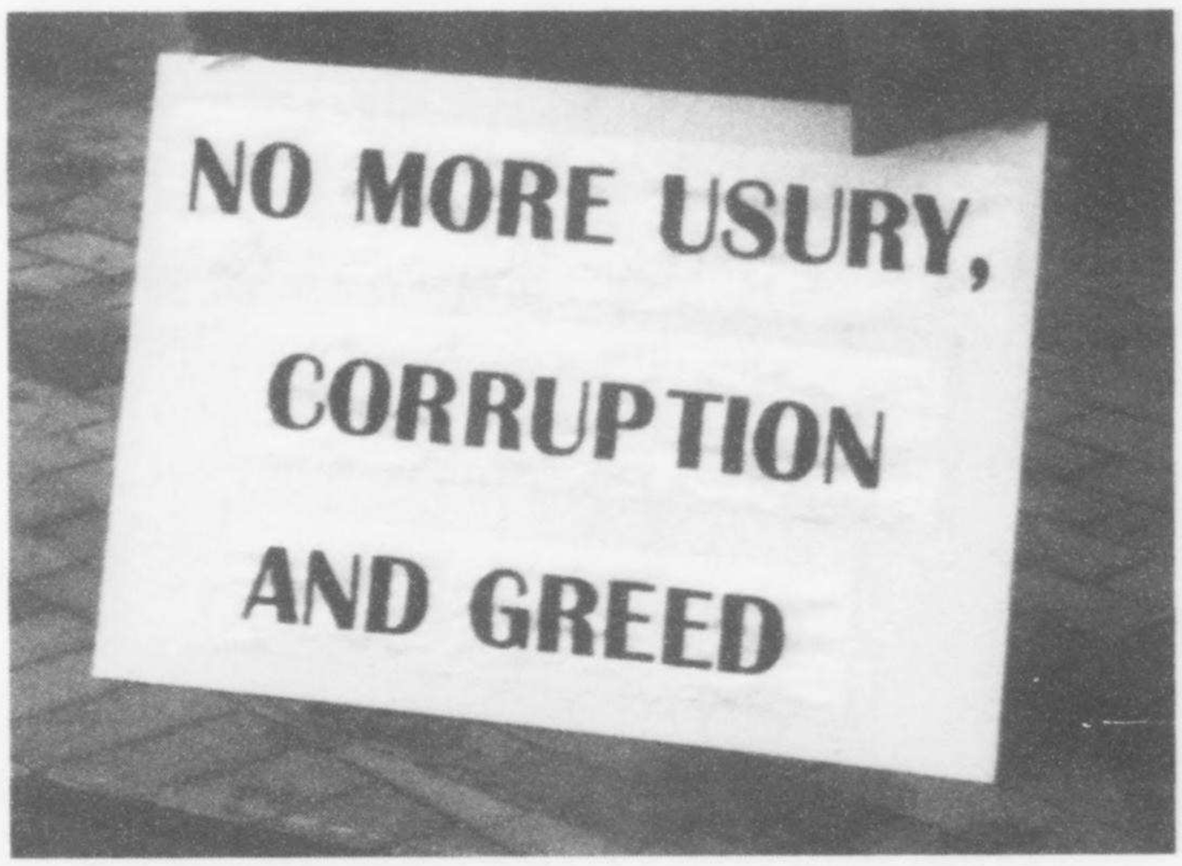

Figure 2 Usury, corruption and greed.

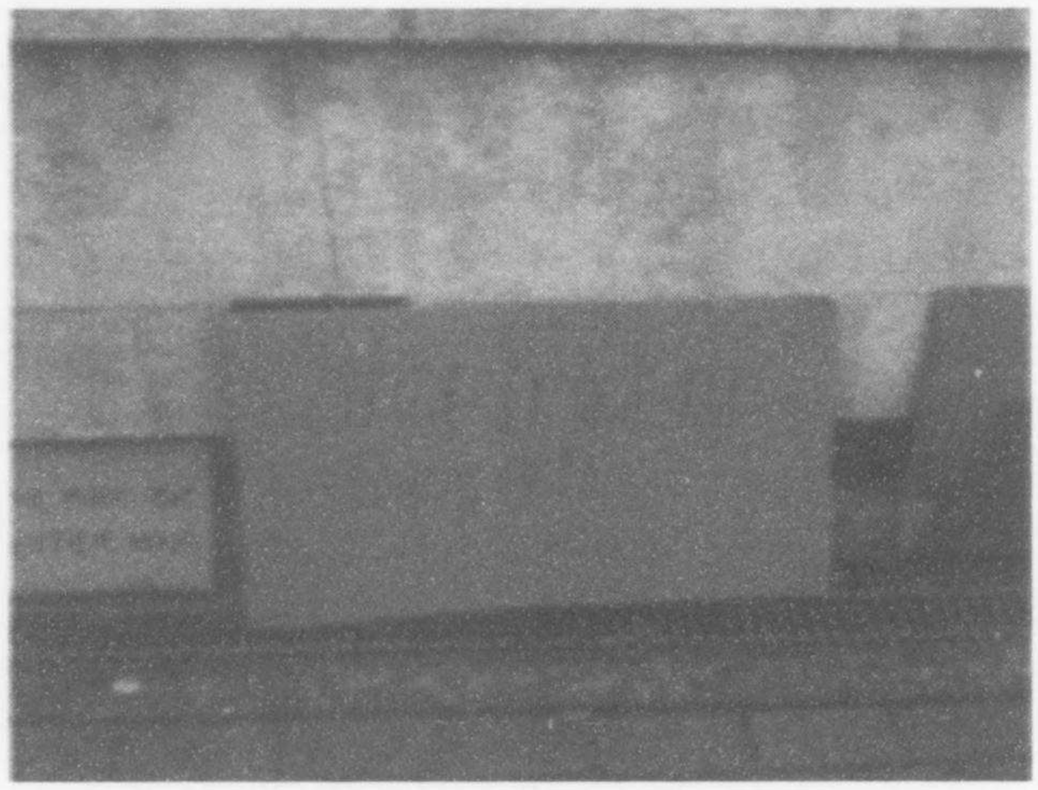

Figure 3 Stop fracking.

Figure 4 99% > 1%.

> I am not putting that up, as you can tell, but this means "Come sit together and everything will come right." It underscores that Tangata whenua are the original occupiers of this land, and that occupation is an indigenous issue. My own partner was Maori and was attacked and killed by the state, and I am here to . . . remember that.

This slogan (ref. Figure 5) which protestors tweeted throughout the day is a creative and evocative appropriation of the spatial imagery of occupation that the broader Occupy movement encompasses. Another participant made a connection with how he was appropriating the word "Occupy" itself by literally drawing it into a local structure of meaning (ref. Figure 6). As he chalked the word "occupy" in various parts of Civic Square, he said:

> Chalk is part of Wellington's protest culture. Two years ago more than a thousand people lay down here and had their silhouettes outlined in chalk to push the government to ban the use of cluster bombs in war. Putting 'occupy' in chalk in Civic square not only helps people get to the protest, it makes this word ours, by putting it [in chalk] in this square, today.

Figure 5 Me noho tahi tena pea ka tika.

Figure 6 Occupy.

Thus protestors constructed the broad Occupy movement's relevance to Aotearoa New Zealand in an array of ways, from localizing the protest in the language used and issues presented on their signs to appropriating and reproducing the broader frames of the Occupy movement.

The fluidity and continual reconstitution of previously established frames was a signature dynamic throughout the day. As the day progressed, the broader Occupy movement's frames became more prevalent on signs and placards produced by participants who had brought cardboard and markers with them, and through activity on various mobile digital platforms. By virtue of its global location, Occupy Wellington was the first protest on the international day of occupation. As messages from protests across the world began to circulate later that day, they found synchronic expression in the signs produced at the protest site. These signs were much more likely to either reproduce key frames that emerged from the global Occupy movement, such as "R*evol*ution," or "We are the 99 percent" or appropriate them in more local terms. Thus, even while participants were copresent in

Wellington, they participated globally, following protests in Australia, India, and London. This has important implications for how we understand logics of aggregation in practice at actual protests.

Protests as aggregations

To assess how logics of aggregation unfolded during Occupy Wellington, it is necessary to understand the protest organizing processes at work throughout the day. To do this, we used traditional participant-observation methods. The importance and excitement of coming together in one place at one time was evident in the protestors' discourse, even as they relied heavily on digital information sharing. We found that logics of aggregation "produced" people at the protest from diverse backgrounds, initially unfamiliar with each other. As they interacted throughout the day, they moved from simply speaking about and stating diverse issues in the form of different speeches, slogans and signs, to focusing on organizing, initiating a slow dialogic process of agreement and disagreement. At the same time, however, it was clear that networking logics were also at play, and that existing activist networks hovered in the background of the protest: participants sometimes mentioned other affinity groups, both formal and informal organizations in which they participated, and some speakers identified themselves as members of a given activist group. The following extracts from the field notes illustrate the intermingling of these broad logics.

Extract two

> *Meanwhile, the speeches continue. One speaker introduces himself as Don Richards, from a group called Positive Money NZ, and talks to the group about his organization, which is attempting to create a new monetary system for New Zealand to move us out of a debt-based system. I am not entirely clear about the details, but he is enthusiastic and distributes several copies of a DVD after his speech. The crowd rushes forward to get them, and I am one of the lucky ones. Don is one of a few people who publicly affiliates himself with an organization. Still, it is clear that there are members of many different organizations present. Three young men, who I interviewed with when the protest began below the bridge, are from the conservative-libertarian student group, ACT on Campus. They stand on the bridge with their signs, which read "Free Markets, Not Bailouts," "Govt is the problem, not the solution," and "Ron Paul, 2012." They stay on top of the bridge for about half an hour, engaging with some other protestors, but not very many. I also stand for a while next to an elderly woman who is distributing pamphlets. She is from a Wellington branch of the International Bolshevik Tendency. She gives me a pamphlet about the Occupy Movement titled "Expropriate Wall Street! Capitalism Can't Be Fixed" saying that they had downloaded a lot of documents from http://www.bolshevik.org, and were distributing and selling them at the protest.*

Extract three

> *Chanting, the group starts moving back to Civic Square. There are people on the other side of the lagoon, drumming and singing in support. I stand on the bridge and do another quick headcount, thinking that the crowd has thinned out. To my surprise, I*

*count more than 200 people. I also realize for the first time just how many young people there are here. The protestors seem to be really diverse in terms of age and gender. Things start happening quickly on the bridge, as I start yet another round of asking people about their signs. On the Civic Square side, a group of about fifty people form a discussion circle. On the Jervois Quay side, several smaller groups form. One group includes the drummers, who are now back, encouraging people to dance and sing. As I interview a man about a sign made by his sister, his roommate joins us and I suddenly find myself in the middle of my first ever game of hackeysack. They tell me "the only rule in this game is not using the word 'sorry' when you drop the ball!" Another group of people sits down with a few cans of paint and some cardboard boxes, making new placards and signs. I wander over to them. They read "R**EVOL**ution," which I recognize as a common sign from the Occupy Wall Street protests. Other signs also appropriate global frames: "We are the 99 percent;" "Too Big to Fail? Too Guilty to Bail!" and "Occupy Welly!" A few people have spread out blankets and are picnicking with their children, with protest signs arranged all around them. For a while I also become a part of a larger impromptu discussion about rising unemployment. Several of the people who talk to me are themselves unemployed. There is a cross-section of people in this discussion: three of them have just graduated from university and are working at McDonalds because there are no other jobs. Another is a middle aged woman who used to be an accountant. A fifth is a man who was fired just after he turned sixty.*

Extract four

Once we reach the Stock Exchange, we continue chanting "We!Are! The 99 percent!" We all form a large semicircle in front of the Rugby Fanzone, facing the Exchange building, and speakers step up ad hoc to the bullhorn. The first speaker changes the tenor of speeches by focusing on organizing rather than issues themselves, and raises the question of what we do now. "Should we wrap this up or continue?" She asks. The crowd responds. "Continue!" She suggests that we start organizing and conduct another protest and march on Labour day. She is followed by two more speakers, one of whom is Joe, who suggests a hui[1] back on the bridge to talk about how to organize more protests, consider an occupation, and create a kaupapa.[2] "How do we make this viral?" he asks. Gesturing to some of the Anonymous organizers who are present with Guy Fawkes masks on, he says: "Our Anonymous folks over there, they're pretty good at getting shit out." This is the first time there is a public acknowledgement of the role that Anonymous has played in organizing the Wellington protest. A third speaker steps up and asks whether there is anyone present who is willing to be part of a core working group that would commit to this long term. Several people raise their hands. A fourth speaker continues the theme, exhorting people to sit down at a hui, hear each other and form an ongoing community. People decide to go back to Civic Square to do this.

Extract five

Meanwhile, it is past four p.m. and the hui or discussion group is going strong. As it gets more sunny than cloudy, the discussion heats up along with the temperature. It is being coordinated by means of a makeshift 'talking pen' that the person talking has to hold. The pen is tossed to and fro across the circle as people take turns to speak to the group. Many other people are standing around the group, talking, smoking, taking photos and texting. As I sit down, someone talks about the importance of logistics, ensuring food, supplies, tents and so forth, and I realize that there is substantial agreement that there should be an actual occupation on the grass behind us. Several

> *people talk about logistics until someone asks whether we need a set of demands. This sets up a debate. One person states that because he is an artist, he feels that the expression of occupation is enough, and that the most important aspect of the movement is to galvanize people and help them act politically in their own way. Another participant disagrees, stating that there has to be a specific set of demands. This opinion, however, seems to be in a minority. One person says to cheers that "our success will be to get banks and the government to realize that enough is enough!" Another disagreement that emerges has to do with how fundamentally this has to do with capitalism. Some, who I discover later are from a socialist group, want the group to emphasize that the occupation is against capitalism. Several others disagree, saying that the protest is about grassroots democracy, and that it is possible to have ideological differences but still be passionate about social justice. There seems to be a fairly large agreement to frame the emerging occupation as a need for democracy. One says: "we have to emphasize real democracy, by the people for the people and an economic system that works for a hundred per cent of the people! Surely we can all agree about that!" This draws a big round of cheers.*

These extracts yield a complex picture of how logics of aggregation and networking, collective and connective action intermingled at Occupy Wellington. As in traditional collective action, the logic of aggregation brought together a unique combination of people at the protest, some of whom were seasoned veterans while others had never participated in protests. What was different however, is that *whereas in the logic of collective action, group identities tend to structure activity, the logic of aggregation inaugurated an emergent, slow and dialogic process of on-site activist organizing.* At the same time, the salience of particular established group and organizational identities faded in and out of the protest throughout the day. For instance, participants were often able to orient themselves to each other by drawing from a shared understanding of the existing activist network in Wellington in particular and in Aotearoa New Zealand more broadly. This was most evident when they introduced themselves to each other or to the on-site author as belonging to one activist organization or another. A few people even Googled an organization if they had not heard of it. Thus, activists utilized a shared normative logic of networking in building legitimacy, relational connectivity, trust, and resource dependencies. The *hui* also evidenced this but itself appeared to be the beginnings of a new collective identity forged out of the unique combination of people who attended the first day of protests, and here too participants drew on existing networks as cognitive and symbolic resources when they considered logistics of the occupation, new and effective divisions of labor and even the meaning of the protest itself and what they could accomplish together.

By the end of the day, the *hui*, which became in retrospect a nascent general assembly of the Occupy Wellington movement, had enabled activists to construct a meso-level collective action frame. The group process of airing and vocalizing thoughts, opinions and disagreement enabled them to agree that grassroots democracy was fundamental to their efforts. Activists quoted by the mainstream media subsequently used the idea of grassroots democracy as a frame to communicate their aspirations to journalists. An article in the *Dominion Post* published a few days later reproduced a comment that was made on the first day of protests, "Occupation Wellington lists its demands as a return to real democracy, a

government by the people for the people and an economic system that works for 100 percent of the people" (Dominion Post, 2011, p. 1).

While emergent democracy appeared to characterize a lot of discourse about the Occupy movement around the world, its emergence in Wellington was particularly significant and effective. Unlike several other cities, the City Council initially supported the occupation. Activists successfully liaised with the Council on the protest's first day and the Mayor visited the occupation site on day two to express her support. Two weeks after the initial protest, the number of tents in Civic Square grew from two to thirty, and finally to more than 60, with over 100 occupiers. Such effective mobilization can be attributed to the successful first day of protests.[3] The occupation lasted for 108 days, until January 30, 2012, when the City Council evicted the last 30 occupiers. While there was tension during the disaggregation, and also among the occupiers themselves, it did not bear the hallmarks of other Occupy evictions in the USA that featured tear gas, police violence, and the arrest of protestors.

During the occupation, occupiers and their supporters increasingly appropriated the deliberative democracy techniques used by Occupy groups around the world. In this way they acquired the collective communication repertoire of the broader movement, including regular general assembly meetings and focalizer meetings. Some participants reported to us later that the human mic system (where a speaker says a phrase and the crowd repeats it, amplifying the message through human rather than technological voice) popular elsewhere, was not especially necessary and not used very often. Occupiers also began to create subgroups, such as Occupy Academia, a series of educational workshops at the occupation site that also had a Facebook page. Other groups included Occupy Your Ears, a project started by the Wellington Craftivist Collective to create a series of music CDs for the Occupy movement. The Occupy Wellington Facebook page has continued its updates more than a year later, most recently with news about protests regarding the Trans-Pacific Partnership Agreement, a series of free trade deals currently in the 15th round of relatively secret negotiations between a number of Pacific Rim countries, including the USA, Canada, New Zealand, and Korea.

Implications

In this time of digital ubiquity, the boundaries between here and there, public and private, institutional and entrepreneurial, formal organization and self-organization, membership and autonomy, local and global are weakening (Bimber, Flanagin, & Stohl, 2005). Our analysis of Occupy Wellington adds richness and depth to the notion of digital ubiquity, most significantly through the proposition that ubiquity marks the onset of a profound hybridity in activist organizing practice and logic. *The weakening of boundaries enables an amalgam of interaction modes, a blurring of logics and a farrago of framing that simultaneously reflects the local and global context in which protests take place.*

Our first research question, which focused on how participants obtained information about the protest, sheds light on how activists themselves experience digital ubiquity in contemporary protests. It is clear that participants' decisions to attend were not guided by their use of a single digital platform, but by multiple digital sources of information. Moreover, activists' personal networks themselves were intricately embedded in digital media and they were unable to distinguish categorically between mediated and nonmediated sources. In this way, participants experienced digital media primarily as a ubiquitous and complex flow of digital messages, and often struggled to identify discrete sources of information.

It is certainly possible, and even desirable to consider digital media in terms of their technological affordances to get a sense of how technological environments evolve. However, when studying the relationship between digital media and processes of participation in protests, our analysis shows that it is more useful to pay attention to how communication processes and messages flow seamlessly from one medium to another, the multiple ways in which protest experiences are mediated in the digital environment, and how material copresence is itself digitally punctuated. Thus, we need more in-depth studies of how participants simultaneously negotiate the material and digital spaces of contemporary protests.

A second, and more profound way in which digital ubiquity produces hybridity in activist organizing is evident in the various logics of activist organizing that intermingle at protests. Our analysis shows that digital environments do not so much produce new logics and forms of activist organizing as they make multiple organizing logics available for activists to draw from. This implies that contemporary protests are likely to be volatile, taking on different kinds of organizing logics simultaneously.

There are also implications for how we understand specific logics that inform activist organizing. To begin with, this study extends our understanding of logics of aggregation in practice. Although Juris (2012) notes that logics of aggregation foreground the "importance of interaction and community building within physical spaces" (p. 266), for him this logic functions only to pull people together and appears to end once people are spatially copresent. Our analysis demonstrates that the production of people in physical spaces is inextricably connected with the emergence of a new shared space, which gives participants a place to explore, experiment, and experience what they can do together. In this way, aggregation transcends spatio-temporal organizational boundaries by enabling people to maneuver affinal group identities and come together in new ways qua individuals, even as it is bound by physical space.

Our analysis also emphasizes that this material space is not separate or distinct from digital activist spaces; rather, participants occupy both spaces simultaneously. Furthermore, networking logics do not dissolve when protest participants are coproduced in physical spaces by logics of aggregation. Rather, extant local activist networks become a symbolic repertoire for activists, especially experienced ones, to orient themselves and each other to the events and issues at hand, drawing upon the very structures that the aggregation seems to be breaking down.

Our analysis also blurs the sharp distinction Bennett and Segerberg (2012) make between collective action and connective action. We found some aspects of traditional collective action logics that emphasize processes of frame alignment and joint communicative repertoires evident on the day of protest. The frames of the global Occupy movement became more prevalent as participants broadcast the Wellington protests alongside other Occupy protests in different parts of the world. Moreover, on the first day of occupation, and more so on subsequent days, occupiers in Wellington began to adopt some of the communication repertoire of the broader movement such as general assemblies. Finally, and importantly, activists on the very first day of protest were able to build on copresence and creatively draw from existing symbolic resources to create an emergent frame for collective action. During that day, the thin ties characteristic of connective action thickened considerably and the protest itself took on age-old organizational characteristics. Activists negotiated with each other, worked out logistics, began to liaise with the City Council, developed protocols for communication, divided labor, and started forging a group identity; in other words, they took on the semblance of traditional collective action.

The protest event also has implications for how we understand connective action as a logic and form of activist practice, notably that organizationally enabled and self-organizing forms of connective action intermingle very closely in practice. As we have already discussed, affinity group involvements sometimes served as discursive resources for activists to coorient themselves to the event; indeed, it is quite likely that people never actually appear at protests as entirely disconnected individuals. Casting Occupy purely as an unorganized crowd of people might miss important nuances of emergent organizing that multiple institutional logics produce.

Conclusion

Despite the apparent disaggregation of the movement since the original occupations, Occupy is clearly affecting more specific mobilizations in Aotearoa New Zealand, such as ongoing protests against the sale of public assets. However, it is simply too early to make conclusive statements about the success or failure of Occupy. Questions of movement effectiveness have historically been fraught and difficult to calibrate, measure and predict because impacts can be diffuse, indirect, subtle, and long-term (Kolb, 2007). That said, the Occupy movement faces significant challenges as well as opportunities in the current environment. On one hand, the availability of multiple institutional logics for organizing can obviously increase the reach and scale of activist organizing. On the other, overreliance on one or another institutional logic may detract from obtaining specific movement outcomes. Logics of aggregation may create unique problems of movement sustainability because the sheer momentum of rapidly aggregating participants in physical spaces is difficult to sustain (Juris, 2012). If logics of connective action privilege the rapid spread of broad and ambiguous movement frames over specific movement demands, then the Occupy movement runs the real risk of appearing to promise too much and deliver too little (Bennett & Segerberg, 2012). As Gitlin (2012) also points outs in an assessment of leaderlessness

in Occupy, movements continue to require some sort of collective action in order to apply coordinated pressure, reach out to allies, and make specific proposals for change. Leveraging multiple organizing logics creatively may therefore be crucial for movement success.

We also note that the contours of the Occupy movement in Aotearoa New Zealand are probably unique to this country. Wellington is a relatively small city, which undoubtedly shaped how aggregation occurred. It is also a visibly progressive city by global standards. For example, local government and police did not virulently oppose participants. In fact, the City Council even rerouted the Rugby World Cup victory parade through the city in order to accommodate the protest—and protestors joined the parade. This stands in stark and consequently shocking contrast with the often repressive and sometimes violent measures against Occupiers in the USA and elsewhere. The ratio between the number of protesters on the International day of Occupation and the people who remained as Occupiers was also quite high. In Wellington, media estimates of the protest ranged from 250 to 300, with more than 100 people eventually becoming occupiers. This ratio is much lower in cities such as Melbourne where protesters numbered in the thousands, but only 200 people stayed as occupiers. Studying these regional variations could yield fascinating insights into how the Occupy movement aggregated and diffused in many ways through different classes and cultures across the world, resonating with and invigorating diverse local social justice issues in the process. In a digitally ubiquitous environment, location and size *still* matters.

Finally, we hope this study demonstrates the value of scholarly studies of contemporary social movements. Like many other protests, the Occupy movement was seen purely as a technological phenomenon, in much the same way as many media commentators dubbed the 2011 "Arab Spring" the "Facebook revolution." Such views, however, have been challenged by those (Gladwell, 2010; Morozov, 2011) who argue that understanding social protests purely in terms of technology misses both the historical and social embeddedness of the issues that are the subject of the protest, as well as larger concerns about social and economic ethics. We hope our analysis shows that casting the Occupy movement as either a technological phenomenon, or dismissing it as an ineffectual, noisy, and vague fringe movement, as most mainstream media, especially in the USA, did, seriously mischaracterizes not only this movement, but all contemporary protests. We need to continue to study protests, looking not only for what is new, but also what is old, to further develop insights both into the dystopias of the current era, as well as emerging and original alternatives.

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Notes

[1] *Hui* is a Te Reo Māori word that roughly translates as an assembly. Traditionally held on a *Marae*, the word is increasingly used to describe other, often public, group discussion processes.

[2] *Kaupapa* is a Te Reo Māori word that roughly translates as foundation, mission, or principle.

[3] Wellington's population is a little more than 200,000 people, in contrast to other Occupy cities such as New York (approx 7 million) or Brussels (approx 1.5 million).

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Generalized Anxiety and Relational Uncertainty as Predictors of Topic Avoidance During Reintegration Following Military Deployment

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For military couples reunited following deployment, discussing or avoiding topics is a central dimension of communication. This paper theorizes about two predictors of topic avoidance that arise from a lack of confidence in social situations: generalized anxiety and relational uncertainty. In Study 1, 220 returning service members described issues they avoid discussing upon reunion. Content analytic findings indicated eight avoided topics. In Study 2, 118 military couples reported on topic avoidance for the first 3 months after homecoming. Multilevel modeling results revealed that the generalized anxiety and relational uncertainty of actors, but not partners, were consistent predictors of topic avoidance. The findings illuminate the complexities of communicating following a tour of duty.

Keywords: Generalized Anxiety; Military Couples; Relational Uncertainty; Topic Avoidance

After being reunited following a tour of duty, military personnel and their romantic partners face the task of negotiating how much information to share about their experiences (Sahlstein, Maguire, & Timmerman, 2009). Military couples may have much to catch up on because channel issues can hamper communication during deployment (e.g., expense, intermittent access, unreliable technology, confidentiality regulations; Greene, Buckman, Dandeker, & Greenberg, 2010). Motivational issues

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also can constrain people's willingness to exchange information during deployment (e.g., reluctance to worry the at-home partner, to distract the service member from warzone duties, and to mar the exchange with conflict in case tragedy strikes; Joseph & Afifi, 2010; Lara-Cinisomo et al., 2012; McNulty, 2005). Although restricted communication during deployment ensures that service members and at-home partners have plenty to talk about upon homecoming (e.g., Joseph & Afifi, 2010; Sahlstein et al., 2009), military couples may avoid discussing sensitive topics due to fear of vulnerability (Bowling & Sherman, 2008; Faber, Willerton, Clymer, MacDermid, & Weiss, 2008).

Understanding the parameters that predict the reluctance of military couples to communicate upon reunion is vital for advancing both theory and practice. Our project builds theory by conceptualizing topic avoidance as rooted in people's lack of confidence about social situations. We theorize about two potential predictors of topic avoidance: *generalized anxiety*, which indexes chronic worry about future events (Newman & Erickson, 2010), and *relational uncertainty*, which reflects people's questions about the status of a relationship (Knobloch, 2010). With respect to practice, evidence demonstrates that topic avoidance corresponds with both stress (Frisby, Byrnes, Mansson, Booth-Butterfield, & Birmingham, 2011) and relationship dissatisfaction (Caughlin & Afifi, 2004; Donovan-Kicken & Caughlin, 2010). Documenting the foundations of topic avoidance during the post-deployment transition, by extension, would be useful for helping military couples to reduce stress and preserve dyadic well-being upon reunion.

Our project is innovative both conceptually and methodologically. Conceptually, our work takes an interdisciplinary perspective by considering both psychological and communicative processes during reintegration following deployment. Methodologically, our project combines qualitative insight into the themes of topic avoidance (Study 1) with quantitative insight into the predictors of topic avoidance (Study 2). Moreover, Study 2 adheres to recommendations within the military family literature (Merolla, 2010) and the topic avoidance literature (Knobloch & Carpenter-Theune, 2004) to collect couple-level data to evaluate the interplay within dyads. Finally, Study 2 responds to calls for longitudinal research on reunion following deployment (Knobloch & Theiss, 2011a) and topic avoidance (Caughlin & Golish, 2002) by tracking the first three months of reintegration.

Topic Avoidance upon Reunion Following Deployment

Topic avoidance entails strategically evading communication with a partner about an issue (Afifi & Guerrero, 2000; Dailey & Palomares, 2004). People engage in topic avoidance for a variety of reasons. Those motivations include protecting themselves from embarrassment, safeguarding their relationship from harm, preventing conflict, desiring privacy, seeing communication as futile, and/or feeling constrained by social norms (Afifi & Guerrero, 2000; Baxter & Wilmot, 1985; Caughlin & Afifi, 2004).

Scholars have not yet catalogued the issues that are challenging for military couples to talk about upon reunion (e.g., Frisby et al., 2011), but speculation exists that military couples are reluctant to discuss what happened at home and overseas, commitment levels, extra-dyadic experiences, and household roles (Faber et al., 2008; Frisby et al., 2011; Sahlstein et al., 2009). Identifying issues avoided during reintegration would be valuable for educating military couples about the communication challenges that may arise upon homecoming. It also would allow a comparison with the topics avoided by civilian couples to determine whether communication skills training programs designed for civilian audiences are suitable for (or require adaption to) military couples navigating reunion. Hence, we pose *RQ1*:

> *RQ1*: What topics, if any, do individuals avoid talking about during reintegration following deployment?

Our theorizing about the predictors of topic avoidance begins with the premise that individuals are motivated to avoid sensitive topics when they are not confident in interpersonal circumstances (e.g., Afifi & Burgoon, 1998). Accordingly, we examine generalized anxiety (Newman & Erickson, 2010) and relational uncertainty (Knobloch, 2010) as constructs that embody a lack of confidence about social situations. Although generalized anxiety and relational uncertainty are not the only constructs that exemplify the propensity to be unsure about interpersonal interaction, they form an advantageous pairing when considered together because they index both psychological and communicative processes, both intrapersonal and interpersonal dynamics, and both socially diffuse and relationship-specific concerns. Thus, we consider generalized anxiety and relational uncertainty as a starting point for theorizing about how people's lack of confidence may correspond with their reluctance to communicate.

We also address calls for dyadic conceptualizations of topic avoidance (Dailey & Palomares, 2004), particularly among military couples (Frisby et al., 2011), by theorizing about actor and partner effects (e.g., Kenny, Kashy, & Cook, 2006). In the vernacular of this study, *actor effects* refer to an individual's own generalized anxiety or relational uncertainty predicting his or her topic avoidance, and *partner effects* refer to a partner's generalized anxiety or relational uncertainty predicting an individual's topic avoidance.

Generalized Anxiety and Topic Avoidance

Generalized anxiety is characterized by chronic worry, nervousness, and apprehension about the future (Behar, DiMarco, Hekler, Mohlan, & Staples, 2009). Its extreme form, generalized anxiety disorder, is marked by symptoms such as uncontrollable worry about everyday situations, restlessness, fatigue, difficulty relaxing, trouble concentrating, and irritability (Newman & Erickson, 2010). People high in generalized anxiety can be overly pessimistic, distracted by potential hazards, hesitant to make decisions, and needy for reassurance (Newman & Erickson, 2010).

Generalized anxiety may motivate returning service members and at-home partners to engage in topic avoidance upon reunion following deployment. For example, people high in generalized anxiety may doubt their ability to solve problems, and, as a result, behave submissively (Newman & Erickson, 2010). They report being overly accommodating, nonassertive, and socially inhibited in their relationships (Eng & Heimberg, 2006); all of these characteristics may make military personnel and their romantic partners reluctant to discuss face-threatening issues. Second, individuals high in generalized anxiety may be uncomfortable experiencing strong emotion, and, as a result, prefer to avoid witnessing and expressing intense affect (Behar et al., 2009; Borkovec, Alcaine, & Behar, 2004). In fact, people high in generalized anxiety experience notable discomfort when feeling strong emotion (Mennin, Heimberg, Turk, & Fresco, 2005; Mennin, Holaway, Fresco, Moore, & Heimberg, 2007). These lines of logic, taken together, suggest that returning service members and at-home partners high in generalized anxiety may avoid discussing face-threatening topics.

Partner effects also may exist. Perhaps partners enact *protective buffering* by concealing problems or minimizing concerns to safeguard individuals high in generalized anxiety from further worry. Notably, military wives engage in protective buffering during deployment to avoid upsetting their husbands in the warzone (Joseph & Afifi, 2010). If this general pattern holds true during reintegration, then returning service members and at-home partners may engage in topic avoidance to shield a partner high in generalized anxiety from more worry. Alternatively, partner effects may stem from a desire to avoid provoking emotional outbursts from a mate. Some evidence suggests that people high in generalized anxiety are prone to intermittent bouts of anger (Newman & Erickson, 2010). If so, then individuals may learn to avoid talking about sensitive issues with a partner high in generalized anxiety to circumvent hostility (e.g., Caughlin, Huston, & Houts, 2000). *H1* and *RQ2* examine our reasoning:

> *H1*: An actor's generalized anxiety is positively associated with his or her topic avoidance during reintegration following deployment.
> *RQ2*: Is a partner's generalized anxiety positively associated with an actor's topic avoidance during reintegration following deployment?

Relational Uncertainty and Topic Avoidance

Whereas generalized anxiety involves worry about future problems, relational uncertainty entails a lack of confidence in the definition of a relationship. *Relational uncertainty* is the degree of confidence people have in their perceptions of involvement within a relationship (Knobloch & Solomon, 1999). Three sources of relational uncertainty form the overarching construct: *self uncertainty* (e.g., "How certain am I about my view of this relationship?"), *partner uncertainty* (e.g., "How certain am I about my partner's view of this relationship?"), and *relationship uncertainty* (e.g., "How certain am I about the definition of this relationship?").

Whereas the sources of relational uncertainty are applicable across relationship types, the content of what people are unsure about varies by dyadic context (Knobloch, 2008; Knobloch & Delaney, 2012). To identify the themes of relational uncertainty relevant to reunion following deployment, Knobloch and Theiss (2012) surveyed 259 recently reunited individuals (137 service members, 122 at-home partners). Open-ended data revealed questions about how to (a) preserve commitment, (b) assimilate everyday routines, (c) negotiate household tasks, (d) adjust to personality changes, (e) navigate sexual closeness and resolve concerns about infidelity, (f) safeguard the returning service member's physical and emotional well-being, and (g) communicate effectively. Our study capitalizes on these findings by constructing a new measure of *relational uncertainty about reunion.* It also attends to the self, partner, and relationship sources of relational uncertainty to afford a comprehensive view.

Military couples experiencing relational uncertainty during reintegration may engage in topic avoidance because they are unwilling to risk the costs embedded in open communication (e.g., Knobloch & Satterlee, 2009). Communicating openly under conditions of relational uncertainty is quite hazardous: People risk embarrassing themselves, feeling vulnerable, detecting a discrepancy in commitment, unearthing issues of discord, pressuring their partner, and accentuating divisiveness (Baxter & Wilmot, 1985; Knobloch & Carpenter-Theune, 2004). Recently reunited military couples, in particular, face a host of communicative perils when they are unsure: Open communication may reveal that infidelity occurred, or that individuals grew apart, or that resentment is brewing over sacrifices made during deployment, or that commitment between partners has waned (e.g., Drummet, Coleman, & Cable, 2003; Knobloch & Theiss, 2012; Sahlstein et al., 2009). Accordingly, relational uncertainty may motivate topic avoidance because people are intimidated by communicating openly.

Research has documented relational uncertainty as a predictor of topic avoidance in civilian contexts. For example, relational uncertainty is positively associated with topic avoidance within sibling relationships (Bevan, Stetzenbach, Batson, & Bullo, 2006), in-law relationships (Mikucki-Enyart, 2011), stepfamilies (Afifi & Schrodt, 2003), cross-sex friendships (Afifi & Burgoon, 1998; Malachowski & Dillow, 2011), and dating relationships (Guerrero & Chavez, 2005; Knobloch & Theiss, 2011b). Hence, our reasoning about the connection between relational uncertainty and topic avoidance among military couples has parallels in other domains.

The possibility of partner effects is less straightforward. Do partners grappling with relational uncertainty behave in ways that discourage individuals from communicating openly during reunion following deployment? When people are unsure about their relationship, they view their partnership more negatively (McLaren, Solomon, & Priem, 2011), feel more negative emotion (Knobloch, Miller, & Carpenter, 2007), and do less to maintain their relationship (Malachowski & Dillow, 2011; Theiss & Knobloch, in press). These results hint that partners experiencing relational uncertainty may act in ways that spark topic avoidance by actors during the post-deployment transition. A recent study supports this logic: Knobloch and Theiss

(2011b) found that individuals were less willing to talk about their relationship when their dating partner was experiencing more partner uncertainty. *H2* and *RQ3* consider these issues:

> *H2*: An actor's relational uncertainty is positively associated with his or her topic avoidance during reintegration following deployment.
> *RQ3*: Is a partner's relational uncertainty positively associated with an actor's topic avoidance during reintegration following deployment?

Study 1

Method

Study 1 evaluated *RQ1* via a cross-sectional, online survey of military personnel recently home from deployment. We recruited returning service members by (a) circulating announcements to military family practitioners, (b) distributing flyers at reintegration workshops, and (c) posting to online forums for military families. Military personnel were eligible to participate if they (a) were currently involved in a romantic relationship, and (b) had returned home from deployment during the past six months (following the timeframe for reintegration posed by Pincus, House, Christenson, & Adler, 2001). Individuals received a $15 gift card for participating.

Advertisements invited military personnel to visit a secure website that hosted an online questionnaire. Participants provided demographic information and responded to an open-ended item that read "Now that you are reunited, what topics, if any, do you avoid talking about with your partner?"

Participants. The sample contained 220 military personnel (185 males, 35 females) living in 27 states who ranged from 18 to 57 years old ($M = 32.69$ years, $SD = 8.45$ years).[1] Participants were Caucasian (80%), African American (6%), Hispanic (5%), Asian (3%), Native American (3%), and other (3%). Most participants were married (83%), lived with their romantic partner (89%), and had children (59%). The length of their romantic relationship averaged 8.06 years ($SD = 6.38$ years).

Participants were members of the U.S. National Guard (64%), the Army (28%), the Navy (3%), the Air Force (3%), and the Marines (2%). They had been deployed, on average, for 11.08 months (*range* = 1–24 months, $SD = 2.88$ months) and home for 3.04 months (*range* = less than 1 week to 6 months, $SD = 1.83$ months). Approximately 57% had completed more than one deployment, and 7% were members of a dual-deployed couple.

Data analysis. We conducted a content analysis of the open-ended responses in several phases (following Neuendorf, 2002). First, the lead author and an outside observer inductively derived themes from the data. Then, we divided responses that referenced multiple ideas into thematic units. A *thematic unit* conveys a single idea, ranges in length from one clause to several sentences, and constitutes a unit of analysis appropriate for open-ended text (Krippendorff, 2004). Next, we trained three

independent judges to code each thematic unit into mutually exclusive and exhaustive categories. We calculated Krippendorff's (2004) α to evaluate reliability, and we resolved disagreements among judges by majority rule. Finally, we grouped the themes into higher-order categories focused on *deployment issues* versus *reintegration issues.*

Results

Only slightly more than half of returning service members reported issues they are reluctant to discuss. Of the 220 participants, 9 participants (4.1%) did not answer the question, 98 participants (44.5%) commented that they do not avoid any topics, and 113 participants (51.4%) listed a total of 151 substantive thematic units.[2] Judges achieved an acceptable level of reliability (overall $\alpha = .86$).

Deployment issues. Three themes pertained to deployment. *Dangers and experiences during deployment* included threats to safety, warzone experiences, and events that occurred during the separation ($n = 56$ thematic units, 37.09% of the substantive thematic units, $\alpha = .85$). Examples included (a) "bombs exploding in the area," (b) "what happened while I was overseas, such as any dangers I faced," (c) "what I have seen over there," (d) "I still haven't gone in any details about what I went through or happenings overseas," (e) "I don't talk about deployment with him," (f) "combat-related deaths and injuries of those around me," (g) "I try to stay away from things that happened negatively over there due to the fact that if I get deployed again, she can stay in the dark and have a positive attitude about it," (h) "just how dangerous everything really was over there," and (i) "fun [family] things that happened while I was gone."

Confidential military information involved mission intelligence not to be shared with civilians ($n = 24$ thematic units, 15.89%, $\alpha = .76$). Examples included (a) "complete details of the type and nature of work I did while [deployed]," (b) "information that may harm the replacement unit in theatre," (c) "details of missions," (d) "what I did for my job while I was deployed – I am still not allowed to talk about it," and (e) "in theatre operations."

Faithfulness and fidelity during deployment focused on the possibility of extra-dyadic affairs ($n = 12$ thematic units, 7.95%, $\alpha = .97$). Sample comments were (a) "men and women that would 'hit' on us," (b) "I had gotten close to another woman and she found out," and (c) "sex while deployed . . . temptations around different genders."

Reintegration issues. Five themes emphasized reunion following deployment. *Household stressors* indexed an assortment of challenges of running a household while readjusting ($n = 15$ thematic units, 9.93%, $\alpha = .83$). These included parenting problems, division of labor, and conflict-inducing topics. Examples were (a) "we don't talk about things that cause arguments – kids, family, etc.," (b) "children," (c)

"some kid topics – we have [adult children] trying to get out on their own," and (d) "whenever she starts saying that I don't do things fast enough for her or that I don't do things how she would, I just ignore her."

Topic avoidance about *the returning service member's feelings and emotions* referenced anxiety, sadness, fear, and distress ($n = 15$ thematic units, 9.93%, $\alpha = .86$). Examples included (a) "my inner feelings," (b) "stress," and (c) "PTSD."

The possibility of a future deployment surfaced as a third theme ($n = 15$ thematic units, 9.93%, $\alpha = .95$). Sample comments were (a) "we avoid talking about possible future deployments," (b) "the Army, it's a sore subject because she has been with me through two deployments and fears another deployment," (c) "about future deployments and the possibility of them," and (d) "the possibility to go back over."

Financial troubles involved adhering to a budget and making ends meet while shifting from a deployment income to a domestic income ($n = 10$ thematic units, 6.63%, $\alpha = .96$). Examples included (a) "financial, medical, and dental," (b) "money matters; I feel we're spending too much day to day," (c) "money is always sensitive," and (d) "money and bills."

Comments referencing *politics, world events, and news coverage* related to the military comprised a final theme ($n = 4$ thematic units, 2.65%, $\alpha = 1.00$). Examples included (a) "politics," and (b) "I stopped watching the news altogether, and we don't talk about world topics like we did before I left."

Discussion

The goal of Study 1 was to identify topics difficult to discuss when service members return home from a tour of duty (*RQ1*). Although the sample contained only military personnel and many participants did not report any avoided topics, the findings provide an initial glimpse of communication challenges upon reunion. The avoided topics pertained to both anchors of the transition from deployment life to civilian life. Deployment-focused topics included (a) dangers and experiences in theatre, (b) confidential military information, and (c) fidelity. Reintegration-focused topics involved (a) household stressors, (b) the returning service member's feelings and emotions, (c) the possibility of a future deployment, (d) financial troubles, and (e) politics, world events, and news coverage.

These findings are important for theoretical, methodological, and pragmatic reasons. With respect to theory, they triangulate Sahlstein et al.'s (2009) conclusion that some military couples may handle communicative dilemmas during reunion by privileging full openness and others may disclose selectively. Methodologically, they provide a basis for crafting closed-ended measures of topic avoidance customized to reintegration. Pragmatically, they offer practitioners a starting point to prepare military couples for the issues that may be face-threatening to talk about during reintegration.

Whereas some issues that emerged in Study 1 are avoided in romantic relationships generally (e.g., sex, money; Caughlin & Golish, 2002), other topics are unique to the cycle of military deployment and reunion (e.g., life-threatening incidents, privileged

details about the mission, the potential for a subsequent tour of duty). These latter findings promote a context-specific view of topic avoidance tailored to the dyadic domain under investigation. Consequently, Study 2 will focus on three overarching categories of topic avoidance: deployment issues, reintegration issues, and relationship issues. We include the final category because it is salient to romantic partners in general (Knobloch & Carpenter-Theune, 2004) and military couples in particular (Frisby et al., 2011).

When we couple these categories of topic avoidance with our theorizing about generalized anxiety and relational uncertainty, our hypotheses and research questions expand accordingly. Hence, Study 2 will evaluate actor effects of generalized anxiety and relational uncertainty on topic avoidance about deployment (*H1a*, *H2a*), reintegration (*H1b*, *H2b*), and the relationship (*H1c*, *H2c*). It also will examine partner effects of generalized anxiety and relational uncertainty on topic avoidance about deployment (*RQ2a*, *RQ3a*), reintegration (*RQ2b*, *RQ3b*), and the relationship (*RQ2c*, *RQ3c*).

Study 2

Method

Study 2 was a longitudinal online survey of U.S. service members and their romantic partners. We advertised the study using similar procedures as Study 1, but to gain a relatively proximal view of homecoming, we recruited military couples in which (a) one or both partners had returned from deployment within the past 30 days, and (b) couples were custodial parents of one or more children (this second criterion was relevant to the larger study).

Procedures. After individuals provided their consent, we emailed them a web address for the Wave 1 questionnaire along with a unique login and a unique password. People who failed to complete the Wave 1 questionnaire within seven days were eliminated from the study along with their romantic partner ($n = 24$ couples). We repeated the data-collection procedures for the continuing couples on the 31st day after their enrollment for Wave 2 and the 61st day after their enrollment for Wave 3. Participants received a $15 gift card for each wave they completed plus a bonus $15 gift card for completing all three waves.

Participants. The sample included 118 heterosexual romantic couples ($N = 236$ individuals; $n = 118$ men, 118 women) residing in 20 states.[3] Individuals ranged in age from 21 to 63 years ($M = 33.03$ years, $SD = 6.84$ years). Most participants were Caucasian (84%); others were Hispanic (6%), African American (4%), Native American (3%), Asian (2%), and other (1%). Most couples were married (98%). Their romantic relationships averaged 9.61 years in length ($SD = 5.67$ years). The

sample comprised 86% single-career military couples and 14% dual-career military couples. One dyad was a dual-deployed couple.

Branches of service included the U.S. Army (57%), Army National Guard (21%), Air National Guard (13%), Air Force (6%), and Marines (3%). Of the deployed service members ($n = 119$), 97% were men ($n = 115$) and 3% were women ($n = 4$). They were stationed in Afghanistan (66%), Iraq (15%), United Arab Emirates (7%), Egypt (3%), Qatar (3%), and other locations (6%). Their primary mission was combat (81%), peacekeeping (9%), training (4%), or other (6%). They were deployed an average of 9.67 months ($SD = 3.86$ months). Approximately 68% had completed multiple deployments.

On average, couples had been reunited 16.78 days ($SD = 8.74$ days) upon enrolling in the study. Only 14% of couples at Wave 1 reported having participated in a program to help military couples after deployment.

Measures. The demographic variables were measured only in Wave 1; the independent and dependent variables were measured in all three waves. We conducted confirmatory factor analyses (CFAs) on the Wave 1 data to verify the unidimensional structure of the multi-item indices (Brown, 2006), and we calculated the scales as the average of responses to the unidimensional items.[4] Table 1 reports the descriptive statistics for each wave.

Generalized anxiety. Two brief scales were combined to operationalize generalized anxiety. The first was the generalized anxiety measure from the short form of the Mental Health Inventory (Berwick et al., 1991; Yamazaki, Fukuhara, & Green, 2005). Participants responded to two items beginning with the stem "How often in the past 30 days have you . . .?" (1 = *none of the time*, 6 = *all of the time*): (a) been a very nervous person (wave *M*s = 1.93–2.23, *SD*s = 1.09–1.23), and (b) felt calm and peaceful (reverse-scored; wave *M*s = 2.80–3.04, *SD*s = 1.12–1.27). To supplement the two-item scale, participants also completed the generalized anxiety item from the Healthy Days Symptoms Module of the Health-Related Quality of Life measure

Table 1 Descriptive statistics by wave.

	Wave 1			Wave 2			Wave 3		
	M	*SD*	α	*M*	*SD*	α	*M*	*SD*	α
Generalized anxiety	0.10	0.87	0.78	−0.07	0.80	0.79	−0.04	0.82	0.78
Self uncertainty	1.49	0.84	0.92	1.65	0.88	0.91	1.69	1.04	0.95
Partner uncertainty	1.73	1.02	0.93	1.94	1.22	0.97	1.97	1.32	0.98
Relationship uncertainty	1.61	0.97	0.94	1.83	1.08	0.93	1.82	1.15	0.94
Reunion uncertainty	2.18	1.06	0.93	2.32	1.11	0.92	2.15	1.09	0.94
Deployment topic avoidance	2.88	1.40	0.84	3.05	1.44	0.84	2.93	1.53	0.86
Reintegration topic avoidance	2.09	0.94	0.75	2.14	0.93	0.73	2.06	0.95	0.77
Relationship topic avoidance	1.88	1.29	0.92	2.12	1.40	0.91	1.90	1.29	0.89

Notes: $N = 236$ individuals for Wave 1, $n = 225$ individuals for Wave 2, and $n = 223$ individuals for Wave 3. Generalized anxiety is reported on a standardized scale.

(Centers for Disease Control and Prevention, 2000). Participants selected a number between 0 and 30 in response to the item "During the past 30 days, for how many days have you felt worried, tense, or anxious?" (wave *M*s = 5.62–6.73 days, *SD*s = 6.67–8.03 days). The three items formed a unidimensional scale when standardized into a common metric.

Relational uncertainty. Existing scales measured self, partner, and relationship uncertainty, and new items gauging reunion-focused issues of uncertainty were created for this study. Individuals responded to items introduced by the stem "How certain are you about . . .?" (1 = *completely or almost completely uncertain*, 6 = *completely or almost completely certain*). The items were reverse-scored so that higher scores denoted more relational uncertainty.

Self, partner, and relationship uncertainty were operationalized using the short form of Knobloch and Solomon's (1999) scales (abridged by Knobloch & Knobloch-Fedders, 2010). Four items indexed *self uncertainty*: (a) how you feel about your relationship, (b) your goals for the future of your relationship, (c) your view of your relationship, and (d) how important your relationship is to you. Parallel items assessed *partner uncertainty*: (a) how your partner feels about your relationship, (b) your partner's goals for the future of your relationship, (c) your partner's view of your relationship, and (d) how important your relationship is to your partner. Four items considered *relationship uncertainty*: (a) the current status of your relationship, (b) how you can or cannot behave around your partner, (c) the definition of your relationship, and (d) the future of your relationship.

The items for *reunion uncertainty* reflected the themes of relational uncertainty that emerged from the open-ended responses Knobloch and Theiss (2012) solicited from recently reunited service members and at-home partners. Seven items formed a unidimensional scale: (a) how to readjust to being together, (b) how to redistribute household chores, (c) how to get to know each other again, (d) how to renegotiate parenting roles, (e) how to be sexually intimate with each other after the time apart, (f) how to assess your partner's health and well-being, and (g) how to communicate with your partner.[5]

Topic avoidance. We wrote new items to operationalize topic avoidance about deployment and reintegration based on the findings of Study 1, and we adapted Guerrero and Afifi's (1995) measure to assess topic avoidance about the relationship. Participants indicated how much they avoided talking with their romantic partner about a series of topics during the past week (1 = *never avoided*, 7 = *always avoided*).

Study 1 revealed three themes of *topic avoidance about deployment*: (a) dangers and experiences during deployment, (b) confidential military information, and (c) faithfulness and fidelity during deployment. Because the first theme encompassed multiple issues, we wrote five items to index the breadth of that category. Seven items constituted a unidimensional measure: (a) danger that the deployed person faced during deployment, (b) what happened during deployment, (c) experiences during deployment, (d) difficulties encountered by the family at home during deployment,

(e) injuries and deaths in the unit during deployment, (f) confidential military information, and (g) faithfulness to your relationship during deployment.

Study 1 also indicated five themes of *topic avoidance about reintegration*: (a) household stressors, (b) the returning service member's feelings and emotions, (c) the possibility of a future deployment, (d) financial troubles, and (e) politics, world events, and news coverage. Again, the first theme contained several related ideas, so we crafted three items to represent its content. Seven items comprised a unidimensional scale: (a) children, (b) household tasks, (c) topics that would cause arguments, (d) the deployed person's feelings and emotions, (e) the possibility of a future deployment, (f) money, and (g) politics, world events, and news coverage.

A three-item scale adapted from Guerrero and Afifi (1995) comprised a measure of *topic avoidance about the relationship*. The items were (a) the state of your relationship, (b) how your relationship is going, and (c) expectations for your relationship.

Results

Preliminary analyses. We conducted preliminary analyses using the Wave 1 data to circumvent the statistical dependence across waves. Paired-samples *t*-tests comparing men ($n = 118$) versus women ($n = 118$) revealed only one difference: Women ($M = 0.34$, $SD = 0.96$) reported more generalized anxiety than men ($M = -0.13$, $SD = 0.70$), $t\,(117) = 4.48$, $p < .001$. Similarly, paired-samples *t*-tests comparing returning service members ($n = 117$) versus at-home partners ($n = 117$; the dual-deployed couple was excluded) indicated that at-home partners ($M = 0.36$, $SD = 0.97$) reported more generalized anxiety than returning service members ($M = -0.14$, $SD = 0.69$), $t\,(116) = 4.81$, $p < .001$. Independent-samples *t*-tests comparing individuals experiencing their first deployment (32%) versus multiple deployments (68%; the dual-deployed couple was excluded) revealed no differences.

We also computed bivariate correlations for the Wave 1 data. Positive associations among the substantive variables were apparent among men, among women, and within couples (see Table 2). Next, we calculated zero-order correlations between the substantive variables and the time-based variables of relationship length and the number of days since reunion. Relationship length was not correlated with any of the substantive variables. Similarly, the number of days since reunion was not correlated with any of the substantive variables for returning service members, but for at-home partners, it was positively associated with partner uncertainty ($r = .22$, $p = .019$) and topic avoidance about reintegration ($r = .32$, $p < .001$).

Substantive analyses. Multilevel models estimated how the generalized anxiety and relational uncertainty of actors and partners predict topic avoidance while addressing the statistical dependence within couples and across time (following Kenny et al., 2006). The dependent variables were an actor's reports of topic avoidance about deployment, reintegration, and the relationship.

Table 2 Wave 1 correlations.

	V1	V2	V3	V4	V5	V6	V7	V8
V1: Generalized anxiety	0.11	0.22*	0.15	0.26**	0.42***	0.36***	0.36***	0.42***
V2: Self uncertainty	0.19*	0.40***	0.52***	0.83***	0.62***	0.23*	0.43***	0.53***
V3: Partner uncertainty	0.07	0.67***	0.32**	0.71***	0.56***	0.26**	0.40***	0.49***
V4: Relationship uncertainty	0.21*	0.92***	0.68***	0.54***	0.72***	0.27**	0.46***	0.60***
V5: Reunion uncertainty	0.30**	0.70***	0.60***	0.75***	0.44***	0.33***	0.54***	0.65***
V6: Deployment topic avoidance	0.20*	0.32***	0.50***	0.34***	0.50***	0.26**	0.59***	0.42***
V7: Reintegration topic avoidance	0.29**	0.37***	0.49***	0.43***	0.55***	0.77***	0.24**	0.75***
V8: Relationship topic avoidance	0.19*	0.46***	0.53***	0.53***	0.54***	0.56***	0.72***	0.34***

Notes: $N = 118$ men, women, or dyads. Wave 1 bivariate correlations for men appear above the diagonal, Wave 1 bivariate correlations for women appear below the diagonal, and Wave 1 within-couple correlations appear on the diagonal and are underlined.

A first step involved evaluating unconditional models with restricted maximum likelihood as the estimation method and heterogeneous compound symmetry as the residual structure. Findings demonstrated substantial between-person variance for the models predicting an actor's reports of topic avoidance about deployment (87%), reintegration (95%), and the relationship (88%) compared to within-person variance. In other words, people's reports of topic avoidance were largely, but not exclusively, stable from month to month.

A second step entailed constructing models to evaluate the hypotheses and research questions. The models distinguished couples by sex (men $= -1$, women $= 1$), and sex was examined as a potential moderator. Each model also included two time-based Level 1 covariates: (a) a lagged variable denoting the topic avoidance actors reported in the previous wave ($t-1$) to account for the autocorrelation of the residuals, and (b) the number of days since reunion. Finally, the models contained three sets of independent variables at Level 1: (a) the generalized anxiety of actors and partners, (b) one measure of the relational uncertainty of actors and partners, and (c) six interaction terms computed as sex multiplied by the time-based covariates and the independent variables.

The continuous predictors were grand-mean centered. No random slopes or intercepts were able to be estimated because actors' scores for topic avoidance were so highly correlated with their lagged scores in the previous wave ($t-1$). The models utilized restricted maximum likelihood estimation and employed heterogeneous compound symmetry for the residual structure. The raw slopes for the independent variables document whether the predictors explain variance in the actor's topic avoidance after controlling for the actor's topic avoidance in the previous wave.

When the main effects were moderated by sex, the interactions were probed using a two-intercept approach to calculate the intercepts and slopes separately for men and women. For these analyses, each time-based covariate and independent variable was multiplied by two dummy-coded terms representing men and women. The Level 1 error variance was set to zero, and random effects were estimated for each person's intercept at Level 2 (as per Kenny et al., 2006). The continuous predictors were grand-mean centered, restricted maximum likelihood was the estimation strategy, and heterogeneous compound symmetry was the residual structure.

Topic avoidance about deployment. Table 3 depicts the main effects for the four analyses predicting topic avoidance about deployment. Generalized anxiety did not correspond with actor effects (*H1a*) or partner effects (*RQ2a*), but sex interacted with a partner's generalized anxiety in all four models. Probing the interaction revealed a trend toward a disordinal interaction. Whereas men's generalized anxiety was positively associated with women's topic avoidance about deployment at a level that approached statistical significance ($b = .21–.22$, $p = .053–.072$), women's generalized anxiety was negatively associated with men's topic avoidance about deployment ($b = -.21$ to $-.24$, $p = .020–.008$). With respect to relational uncertainty, actor effects were apparent for the models containing self uncertainty and reunion uncertainty (*H2a*). Relational uncertainty did not coincide with any partner effects (*RQ3a*).

Topic avoidance about reintegration. Table 4 reports the main effects predicting topic avoidance about reintegration. Across all models, the generalized anxiety of actors (*H1b*) and the relational uncertainty of actors (*H2b*) were positively associated with their topic avoidance about reintegration. Partner effects for generalized anxiety did not emerge (*RQ2b*), but when partners reported more partner uncertainty, actors reported more topic avoidance about reintegration (*RQ3b*). In addition to the main effects, an ordinal interaction involving sex surfaced for the $t-1$ lagged covariate across all models. Women's scores for topic avoidance about reintegration were more positively correlated from wave to wave ($b = .52–.56$, all $p < .001$) than men's scores ($b = .30–.33$, all $p < .001$).

Topic avoidance about the relationship. See Table 5 for the main effects predicting topic avoidance about the relationship. As hypothesized, the generalized anxiety (*H1c*) and relational uncertainty (*H2c*) of actors were positively associated with their topic avoidance about the relationship. Whereas no partner effects for generalized anxiety occurred (*RQ2c*), partner effects for relational uncertainty were apparent for all of the analyses except the model containing self uncertainty (*RQ3c*). Finally, an ordinal interaction for sex by the $t-1$ lagged covariate was evident for the model including reunion uncertainty. Women's scores for topic avoidance about the relationship were more positively correlated from wave to wave ($b = .41$, $p < .001$) than men's scores for topic avoidance about the relationship ($b = .25$, $p < .001$).[6]

Table 3 Main effects for the multilevel models predicting topic avoidance about deployment.

	Self uncertainty			Partner uncertainty			Relationship uncertainty			Reunion uncertainty		
	b	(*SE*)	*t*	*b*	(*SE*)	*t*	*b*	(*SE*)	*t*	*b*	(*SE*)	*t*
Intercept	3.09	(0.07)	41.23***	3.09	(0.08)	41.10***	3.09	(0.08)	41.19***	3.08	(0.07)	41.29***
Slopes for covariates												
Sex	−0.07	(0.07)	−1.06	−0.07	(0.07)	−1.09	−0.07	(0.07)	−1.05	−0.09	(0.07)	−1.22
t − 1 Topic avoidance	0.65	(0.04)	16.07***	0.64	(0.04)	15.83***	0.64	(0.04)	15.98***	0.64	(0.04)	15.81***
Days since reunion	−0.00	(0.00)	−1.44	−0.00	(0.00)	−1.35	−0.00	(0.00)	−1.40	−0.00	(0.00)	−1.20
Slopes for actor effects												
Generalized anxiety	0.09	(0.07)	1.29	0.12	(0.07)	1.62	0.10	(0.07)	1.35	0.07	(0.07)	0.97
Relational uncertainty	0.13	(0.07)	2.03*	0.07	(0.05)	1.51	0.10	(0.06)	1.74	0.18	(0.05)	3.28**
Slopes for partner effects												
Generalized anxiety	−0.01	(0.07)	−0.10	0.00	(0.07)	0.04	−0.01	(0.07)	−0.20	−0.01	(0.07)	−0.15
Relational uncertainty	0.04	(0.07)	0.63	0.05	(0.05)	1.13	0.07	(0.06)	1.25	0.04	(0.05)	0.68

Notes: Each analysis included one measure of relational uncertainty.
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

Table 4 Main effects for the multilevel models predicting topic avoidance about reintegration.

	Self uncertainty			Partner uncertainty			Relationship uncertainty			Reunion uncertainty		
	b	(*SE*)	*t*	*b*	(*SE*)	*t*	*b*	(*SE*)	*t*	*b*	(*SE*)	*t*
Intercept	2.13	(0.05)	46.41***	2.13	(0.05)	47.05***	2.13	(0.05)	46.74***	2.13	(0.04)	49.42***
Slopes for covariates												
Sex	0.00	(0.05)	0.09	0.00	(0.05)	0.02	0.01	(0.05)	0.17	−0.01	(0.05)	−0.26
t − 1 Topic avoidance	0.44	(0.04)	10.36***	0.43	(0.04)	10.13***	0.43	(0.04)	10.16***	0.38	(0.04)	9.24***
Days since reunion	−0.00	(0.00)	−1.15	−0.00	(0.00)	−1.07	−0.00	(0.00)	−1.10	−0.00	(0.00)	−0.71
Slopes for actor effects												
Generalized anxiety	0.16	(0.05)	3.23**	0.18	(0.05)	3.65***	0.16	(0.05)	3.20**	0.13	(0.05)	2.77**
Relational uncertainty	0.21	(0.04)	4.67***	0.14	(0.03)	4.28***	0.16	(0.04)	4.27***	0.27	(0.04)	7.31***
Slopes for partner effects												
Generalized anxiety	0.01	(0.05)	0.21	0.01	(0.05)	0.26	−0.00	(0.05)	−0.06	−0.01	(0.05)	−0.13
Relational uncertainty	0.04	(0.04)	0.81	0.07	(0.03)	2.14*	0.07	(0.04)	1.88	0.06	(0.04)	1.62

Notes: Each analysis included one measure of relational uncertainty.
*$p < 0.05$;**$p < 0.01$;***$p < 0.001$.

Table 5 Main effects for the multilevel models predicting topic avoidance about the relationship.

	Self uncertainty			Partner uncertainty			Relationship uncertainty			Reunion uncertainty		
	b	(*SE*)	*t*	*b*	(*SE*)	*t*	*b*	(*SE*)	*t*	*b*	(*SE*)	*t*
Intercept	2.07	(0.07)	30.84***	2.07	(0.06)	33.02***	2.05	(0.06)	33.10***	2.07	(0.06)	32.23***
Slopes for covariates												
Sex	0.01	(0.06)	0.16	0.01	(0.06)	0.16	0.02	(0.06)	0.34	−0.01	(0.06)	−0.13
t − 1 Topic avoidance	0.35	(0.04)	8.36***	0.34	(0.04)	8.34***	0.32	(0.04)	7.97***	0.33	(0.04)	7.99***
Days since reunion	−0.00	(0.00)	−1.55	−0.00	(0.00)	−1.65	−0.00	(0.00)	−1.50	−0.00	(0.00)	−1.05
Slopes for actor effects												
Generalized anxiety	0.18	(0.06)	2.83**	0.21	(0.06)	3.40***	0.17	(0.06)	2.66**	0.16	(0.06)	2.52*
Relational uncertainty	0.50	(0.06)	8.25***	0.34	(0.04)	7.71***	0.45	(0.05)	8.64***	0.46	(0.05)	9.09***
Slopes for partner effects												
Generalized anxiety	0.04	(0.07)	0.64	0.03	(0.06)	0.50	0.01	(0.06)	0.19	0.03	(0.07)	0.48
Relational uncertainty	0.04	(0.06)	0.66	0.15	(0.04)	3.43**	0.12	(0.05)	2.38*	0.11	(0.05)	2.15*

Notes: Each analysis included one measure of relational uncertainty.
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

Discussion

The results of Study 2, although complex, can be encapsulated in two ways. One approach is by comparing actor versus partner effects. People's topic avoidance was more consistently associated with their own generalized anxiety (*H1*) and relational uncertainty (*H2*) than their partner's generalized anxiety (*RQ2*) and relational uncertainty (*RQ3*). In other words, people's own lack of confidence in social situations (rather than their partner's lack of confidence) is a more proximal predictor of their reticence to talk about sensitive issues during reintegration. This finding could be an artifact of measurement such that actor effects reflect shared method variance within informants relative to partner effects across informants. Conversely, individuals may have difficulty discerning a partner's generalized anxiety and relational uncertainty. This latter account accentuates the importance of examining a partner's communication behaviors as a pathway through which individuals detect (or fail to detect) their partner's lack of confidence.

Another approach to making sense of the results is by comparing the topics. People's reluctance to discuss deployment was positively associated with an actor's self uncertainty and reunion uncertainty (*H2a*), and men's topic avoidance about deployment was negatively associated with women's generalized anxiety (*RQ2a*). People's reluctance to discuss reintegration and their relationship was predicted by an actor's generalized anxiety (*H1b*, *H1c*), an actor's relational uncertainty (*H2b*, *H2c*), and, in some models, a partner's relational uncertainty (*RQ3b*, *RQ3c*). Slicing the results by topic demonstrates that people's behavior is not uniform across issues. Whereas studies of topic avoidance often aggregate across subject areas for parsimony (e.g., Knobloch & Carpenter-Theune, 2004; Malachowski & Dillow, 2011; but see Donovan-Kicken & Caughlin, 2010; Frisby et al., 2011), the findings of Study 2 underscore the importance of attending to nuances in the content individuals are unwilling to discuss.

General Discussion

Sharing and withholding information is a basic communication process within relationships (e.g., Afifi & Guerrero, 2000) and especially among military couples reunited following deployment (e.g., Sahlstein et al., 2009). Study 1 addressed the need for an inclusive inventory of the topics military couples have difficulty discussing upon homecoming (Frisby et al., 2011). Study 2 combined theorizing about generalized anxiety and relational uncertainty, two constructs that epitomize people's lack of confidence in social situations, to examine why military couples may refrain from discussing sensitive topics during reintegration.

The Nature of Topic Avoidance among Recently Reunited Military Couples

A prerequisite for understanding topic avoidance in this context was identifying commonly avoided issues (*RQ1*). Study 1 revealed three topics stemming from being separated during the tour of duty: (a) dangers and experiences during deployment,

(b) confidential military information, and (c) faithfulness. Five topics pertained to reintegration: (a) household stressors, (b) the returning service member's feelings and emotions, (c) the possibility of a future deployment, (d) financial troubles, and (e) politics, world events, and news coverage. A remarkable feature of this list is the breadth and depth of issues that are challenging to discuss upon homecoming. The topics span pragmatic hassles and emotional difficulties; past, present, and future experiences; issues internal and external to the dyad; and concerns related to military and civilian life.

On the other hand, topic avoidance may be neither particularly dynamic nor universally pervasive among military couples during reintegration (e.g., Frisby et al., 2011; Sahlstein et al., 2009). One conspicuous aspect of Study 2 was that topic avoidance was relatively stable. Hence, our substantive analyses were stringent because we controlled for people's reports of topic avoidance in the previous month, but generalized anxiety and relational uncertainty still emerged as predictors despite the consistency of topic avoidance from wave to wave. An implication is that people's inclination to guard against face-threatening conversations may remain fairly steady across the first three months of reintegration following deployment.

An even more striking attribute of our data was the subdued prevalence of topic avoidance. Slightly less than half of participants in Study 1 reported that they did not avoid any topics in response to an open-ended item, and participants in Study 2 reported relatively low levels of topic avoidance via rating scales. Although the findings are not directly comparable given the different strategies for measuring topic avoidance in Study 1 versus Study 2, the two measurement techniques coalesced in suggesting that topic avoidance was not widespread. One explanation is that the modest salience of topic avoidance reflects reality. Perhaps advances in communication technologies linking military personnel with at-home partners during deployment translate into less topic avoidance upon reunion (e.g., Greene et al., 2010). An alternative account is the endorsement of an openness ideal that is not congruent with actual behavior. For example, Caughlin, Mikucki-Enyart, Middleton, Stone, and Brown (2011) found that families of lung cancer patients were able to function effectively by espousing openness while strategically avoiding sensitive topics. Perhaps military couples, too, reconcile the apparent contradiction of valuing pure openness while communicating selectively. No matter what the origins of the findings, however, the broader point is that any conclusions from our research must be contextualized by the relative stability and modest magnitude of topic avoidance in our data.

Generalized Anxiety as a Predictor of Topic Avoidance

Mixed support was apparent for our logic connecting generalized anxiety with topic avoidance. Although the generalized anxiety of actors did not predict people's reluctance to talk about deployment (*H1a*), it was positively associated with their avoidance of reintegration (*H1b*) and their relationship (*H1c*). Whereas scholars have hinted that individuals with chronic worry may find it difficult to communicate about sensitive issues (Eng & Heimberg, 2006; Newman & Erickson, 2010), our

findings provide initial evidence of an association between people's generalized anxiety and their topic avoidance. Perhaps more importantly, our results showcase the ties between people's mental health and their communication. Typically the study of mental health is left to the purview of psychologists, but communication scholars are well equipped to make important contributions to understanding how people's mental health intersects with interpersonal interaction (e.g., Segrin, 2013). Communication scholars have generated key insights about depression in recent years (e.g., Duggan & Le Poire, 2006; Knobloch, Knobloch-Fedders, & Durbin, 2011; Segrin & Rynes, 2009), and generalized anxiety is another component of people's mental health that deserves attention within the discipline (e.g., Segrin, Badger, Dorros, Meek, & Lopez, 2007).

Partner effects of generalized anxiety, rather than actor effects, were apparent for people's topic avoidance about deployment (*RQ2a*). The nature of the association varied for men (most of whom were returning service members) versus women (most of whom were at-home partners). When men experienced more generalized anxiety, women engaged in more topic avoidance about deployment at a level that approached statistical significance. The direction of this correlation is compatible with our logic about benevolent and/or self-protective motives: Women may be trying to shield their partner from stressful memories of deployment (e.g., Joseph & Afifi, 2010; Sahlstein et al., 2009) or trying to guard against hostile outbursts by their partner (e.g., Newman & Erickson, 2010). On the other hand, when women experienced more generalized anxiety, men engaged in less topic avoidance about deployment. A very speculative explanation is that men may be trying to mollify their partner's anxiety by sharing benign details about deployment, a strategy that may parallel the *reassuring safety* behavior Merolla (2010) identified in the communication of military couples during deployment. The motivations underlying the partner effects of generalized anxiety on people's topic avoidance about deployment, as well as the reasons for the divergence between men and women, represent important directions for future research.

Relational Uncertainty as a Predictor of Topic Avoidance

With respect to relational uncertainty, we theorized that military couples who are unsure about the dynamics of their partnership may prefer to avoid communicating about sensitive issues rather than risk potential costs (e.g., Knobloch & Satterlee, 2009). The results were largely consistent with our reasoning: When individuals experienced more relational uncertainty, they reported more topic avoidance in 10 of 12 tests (*H2*). Two actor effects, corresponding with the self source of relational uncertainty and the reunion theme of relational uncertainty, were apparent for all three topics. Not only do these findings complement work linking relational uncertainty with topic avoidance across a variety of dyadic domains (Afifi & Schrodt, 2003; Bevan et al., 2006), but they also cohere with evidence of nuances in both the sources (Priem & Solomon, 2011) and the themes (Knobloch, 2008) of relational uncertainty. In the context of a service member's reentry into domestic life, ambiguity about people's own view of their relationship and ambiguity about

reintegration appear to be particularly potent predictors of their willingness to communicate openly about sensitive issues.

RQ3 inquired about whether the relational uncertainty of partners corresponds with the topic avoidance of actors. Partner effects surfaced beyond the variance explained by actor effects in 33% of the models, most notably for people's topic avoidance about the relationship. These findings suggest that a partner's relational uncertainty plays a role in how willing individuals are to discuss the status of their relationship (e.g., Knobloch & Theiss, 2011b). When people sense that their partner is unsure about his or her level of involvement, they may be more reluctant to communicate about the nature of the relationship because of the potential for awkwardness or tension (e.g., Knobloch & Satterlee, 2009). More generally, the partner effects signify reciprocal influence between individuals such that one person's ambiguity is manifest in the other person's behavior. Our findings, paired with evidence of partner effects of relational uncertainty on other communication processes (Knobloch & Theiss, 2011b; Theiss & Knobloch, 2009), imply that a next generation of theorizing about the link between relational uncertainty and communication should account for the interplay within dyads.

Strengths, Limitations, and Directions for Future Research

Our project contains several strengths. Whereas communication scholars have examined the behavior of military couples using qualitative methods (Merolla, 2010; Sahlstein et al., 2009) or quantitative methods (Frisby et al., 2011; Joseph & Afifi, 2010), our project capitalized on both open-ended and closed-ended data to illuminate topic avoidance. Moreover, Study 2 answered calls for new measures of topic avoidance (Frisby et al., 2011) and relational uncertainty (Knobloch & Theiss, 2012) tailored to the issues facing military couples upon reunion. Study 2 also followed advice in the literature on military couples (Merolla, 2010) and the literature on topic avoidance (Knobloch & Carpenter-Theune, 2004) to solicit responses from both partners to gain insight into mutual influence within dyads. Finally, Study 2 heeded recommendations in work on military couples (Knobloch & Theiss, 2011a) and work on topic avoidance (Caughlin & Golish, 2002) to collect data over time.

The successes of our project, however, are tempered by limitations. For example, the majority of participants were affiliated with the U.S. Army and the National Guard. More heterogeneous samples are needed to determine how well our findings apply to military couples affiliated with the Navy, the Air Force, and the Marines (e.g., Greene et al., 2010). Another limitation is that direct comparisons between topic avoidance in the two datasets are obscured by the divergence between the open-ended measure used in Study 1 and the closed-ended measure employed in Study 2. In addition, our funds for Study 2 were limited to only three waves of data collection, which prevented us from modeling growth curves and taking full advantage of our longitudinal design.

Issues of temporality and causality are important to tackle as well. Our logic cast generalized anxiety and relational uncertainty as predictors of topic avoidance, but it is equally plausible that people's decisions to discuss or evade sensitive issues contribute to their subsequent generalized anxiety (e.g., Donovan-Kicken & Caughlin, 2011) and

relational uncertainty (e.g., Knobloch & Theiss, 2011b). Limited evidence speaks to reciprocal linkages among the constructs, but Knobloch and Theiss (2011b) found that romantic partners experienced more relational uncertainty when they avoided talking about their relationship during the previous week. An added benefit of collecting more than three waves of data would be the ability to conduct sequential analyses to disentangle time order in the associations among generalized anxiety, relational uncertainty, and topic avoidance.

A final task involves scrutinizing people's motivations. Our project provides an incomplete picture of topic avoidance upon reunion due to a lack of data on *why* military couples avoid discussing sensitive issues. Although topic avoidance, in general, tends to be dissatisfying (Caughlin & Afifi, 2004; Caughlin & Golish, 2002; Donovan-Kicken & Caughlin, 2010), restricting openness is less debilitating when individuals seek to safeguard their partner or their relationship from harm compared to when they hope to protect themselves from embarrassment or disapproval (Caughlin & Afifi, 2004; Donovan-Kicken & Caughlin, 2010). Accordingly, we encourage scholars to examine the motives underlying people's decisions to eschew communication about sensitive topics during the post-deployment transition.

Conclusion

Our project conceptualized people's lack of confidence about social situations as a foundation of topic avoidance among military couples recently reunited following deployment. On a practical note, the data may help military couples negotiate the cycle of deployment and reintegration. For example, Study 1 identified eight avoided topics during reintegration, which could be incorporated into pre-deployment and post-deployment programming to teach military couples about the sensitive issues that may arise. Returning service members and at-home partners may be better equipped to handle face-threatening topics if they are knowledgeable about the content in advance. Study 2 documented generalized anxiety and relational uncertainty as predictors of topic avoidance. These findings suggest that delineating ways to bolster the confidence military couples have in social situations may help alleviate their difficulty talking about sensitive topics. We hope that both sets of results will be useful for educating returning service members and at-home partners about how to communicate effectively upon reunion following deployment.

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Notes

[1] Knobloch and Theiss (2011a) reported closed-ended data from this sample.

[2] We conducted subsidiary analyses on the demographic variables to compare participants who reported at least one avoided topic ($n = 113$) to participants who reported that they do not avoid any topics with their romantic partner ($n = 98$). Age was the only variable that distinguished the two groups. Participants who reported at least one avoided topic ($M = 34.59$ years, $SD = 8.12$ years) were older than participants who did not ($M = 30.71$ years, $SD = 8.16$ years), $t\ (209) = 3.37$, $p < .001$.

[3] A second study drawn from the sample is described by Knobloch, Ebata, McGlaughlin, and Ogolsky (in press). Generalized anxiety and all of the dependent variables are unique to this paper.

[4] The fit statistics for the CFA models are available from the first author.

[5] Subsidiary CFA findings demonstrated that (a) self, partner, and relationship uncertainty were not unidimensional with the 12 items loaded onto 1 factor, and (b) self, partner, relationship, and reunion uncertainty were not unidimensional with the 19 items loaded onto 1 factor. Thus, we evaluated the measures in separate models (following Knobloch & Theiss, 2011a).

[6] Findings were similar for the subsample of couples in which the man was deployed and the woman was the at-home partner ($n = 114$ couples).

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Occupational Stereotypes, Perceived Status Differences, and Intercultural Communication in Global Organizations

Paul M. Leonardi & Carlos Rodriguez-Lluesma

This paper offers a novel perspective on why individuals in global organizations make culturally based attributions of their colleagues that impede effective working relations. Drawing on observational and interview data from an ethnographic study of product development work at a global automaker's engineering centers in Mexico, the United States, and India, we show the important role that occupational stereotypes and perceived status differentials play in global workplace interaction. The findings demonstrate that individuals who consider themselves to be "low-status" attempt to increase their status by leading high-status individuals to believe that they work in ways that reflect dominant occupational stereotypes. However, because these stereotypes are often inaccurate, members of the high-status culture assume that the stereotype-imitating behaviors of low-status individuals represent deficiencies in how they work. These findings have important implications for intercultural interaction in the global workplace and for theories of communication in multinational organizations.

Keywords: Organizations; Global; Qualitative; Stereotype; Status

Few knowledge-intensive workers in today's global economy can claim to work only with individuals in their own country. From large multinational corporations that regularly assemble project teams comprising individuals from multiple countries, to small domestic-based independently owned firms whose management chooses to source design, service, or manufacturing processes to offshore affiliates, daily global

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interaction in the workplace is on the rise. Researchers who focus on communication in global organizations have convincingly demonstrated that workers draw their identities and, consequently, their work styles from the various cultures (e.g., national, occupational, organizational) in which they claim membership (Gibbs, 2009a; Stohl, 1995). These differential cultural profiles assembled by team members can create tensions (both good and bad) that undergird global interaction in the workplace (Gibbs, 2009b).

One of these tensions that has received little examination in the literature on global workplace interaction is the negotiation of status. In this paper, we focus on status through the lens of cultural stereotypes. In doing so, we offer a novel perspective on why individuals in global organizations make culture-based attributions of their colleagues that impede effective intercultural working relations. This perspective, inducted from an ethnographic study of product development work at a major global automaker's engineering centers in three countries, highlights the important role that culturally based stereotypes and perceived status differences play in global workplace interaction. We show how perceived status differences can lead workers in one country to tell coworkers in another country that they completed tasks in ways that were different than they actually did, and how this inaccurate communication about their work can result in misattributions about their skill as professionals by those same coworkers. By focusing on the creation and deployment of stereotypes in an empirical organizational setting, as opposed to the laboratory, we are able to show how cultural memberships produce stereotyped perceptions, and how perceived status differences lead groups to inadvertently enact certain cultural stereotypes in an attempt to bolster their own status—sometimes with negative consequences.

Theoretical Background

Stereotypes and Social Interaction

When individuals interact, in formal or informal groups, with people from diverse social categories, their differences are more likely to be salient and, therefore, more likely to activate social stereotypes associated with that category (Hogg & Reid, 2006). For example, people are more likely to think of themselves in gender-stereotypical ways in mixed-sex as opposed to same-sex groups (Hollingshead & Fraidin, 2003), and more likely to think of themselves as members of a particular national cultural group when participating in mixed-culture rather than same-culture groups (Yoon, 2011). When stereotypes are well known, but individuals are not known personally to each other, those stereotypes may affect both how individuals treat one another and how they view themselves.

People change their behavior in instances of global workplace interaction not simply because they hold a stereotype of others, but because the presence of someone from another culture compels them to employ cultural stereotypes to evaluate their own capabilities in relation to those embodied in the stereotype of their intercultural communication partner (Goff, Steele, & Davies, 2008). For example, if an American

is interacting with a Briton she may stereotype herself as speaking sub-standard English, and take on an affectation that somewhat resembles a British accent, or begin to use words such as "brilliant" or "cheeky" that are not normally part of her lexicon. Research suggests that this practice of communication accommodation occurs regularly in cross-cultural settings in both speech acts and behaviors as individuals (a) activate stereotypes about themselves and others (e.g., "Brits speak a cultured English, but Americans, like me, speak a sub-standard English"), (b) use those stereotypes to determine what their communication partner must think about them (e.g., "Brits think that Americans speak sub-standard English") and (c) consciously or unconsciously adapt their communicative behaviors to accommodate the expectations of people who embody a different stereotype (e.g., "I will use the word 'brilliant' instead of 'cool' in my conversation with him so I don't seem so vulgar") (Gallois, Ogay, & Giles, 2005).

Culture and the Development of Occupational Stereotypes

Within organizations, many stereotypes exist about particular occupations. For example, studies have shown that individuals hold strong popular stereotypes about how accountants (Cory, 1992) and engineers (Leonardi, Jackson, & Diwan, 2009) work. Occupational stereotypes are often activated in situations, where people from multiple occupations come together to work on a shared task, such as architects, engineers, and contractors on construction sites (Loosemore & Tan, 2000). But within a given occupation, occupational stereotypes can be activated when group members come from different national cultures. Yurtseven (2002), for example, discusses how the "engineer" is stereotyped differently across various national cultures and how such stereotypes cause problems for foreign engineers who wish to pursue advanced degrees or work in the US. His suggestions that the stereotype of the "US engineer" as someone who likes to tinker, works alone, and is a know-it-all inventor (p. 17) does not match up with the identity of engineers in many other countries, and it often discourages foreign-born individuals from wanting to work as engineers in the US.

Little is known about the role that occupational stereotypes play in organizations, particularly in situations where interacting members of the same occupation are from different national cultures. Recent examinations of the role of occupational and professional identities in the workplace observe that occupational standing often dwarfs other cultural associations, because of the status associated with certain kinds of work (Cheney & Ashcraft, 2007; Collinson, 2003). Some studies have even begun to show that when membership in occupational culture is held in common, organizational members will sometimes attempt to construct status differences by appending other (perceived lower or higher status) cultural memberships, like sociodemographic culture (Dryburgh, 1999; Rumens & Kerfoot, 2009) or national culture (Gelfand, Erez, & Aycan, 2007; Kunda, 1992) to it.

Thus, we might expect that in instances of global workplace interaction, individuals would draw on culture-specific occupational stereotypes to make sense

of their own work styles and the work styles of others, rather than simplistic culture-based stereotypes. Moreover, Smith et al. (2006) show that when individuals do not regularly engage in the kinds of informal social talk and interaction that occasion liking and friendship, repeated, formal, task-based interaction between individuals, actually reduces individuation and increases the likelihood of stereotyping. Because, in most organizations, global workplace interaction happens through media that make the transmission of social cues and informal interaction difficult (Cramton, 2001; Maznevski & Chudoba, 2000), it tends to be task-based (Gelfand et al., 2007) and relatively formal (Gudykunst & Ting-Tommey, 1988). Therefore, we might expect that culture-based occupational stereotypes would surface in these kinds of interactions to interpret ambiguity and guide behavior.

The extant literature suggests that stereotypes shape perceptions of self and others in global interactions, and that individuals may confound national and occupational identities into stereotypes when interacting with people from other countries. Yet, it is unclear (a) when individuals activate occupational stereotypes to make sense of their intercultural global interactions, (b) under what conditions they might change their work styles when interacting with people from the same occupation, but who work in different countries, or (c) how stereotype-induced changes in behavior or communication might affect ongoing social dynamics and task completion in global organizations. To explore these issues, we turn to data collected during an ethnographic study of global engineering work at International Automobile Corporation (IAC).

Methods

IAC (a pseudonym, as are all names used in this article) is a large automobile manufacturer headquartered in the United States, whose distribution of engineering work across several continents is increasingly typical of the industry. Although the majority of IAC's engineering workforce resided at its technical center in Michigan, IAC has long maintained engineering operations abroad and at the time of this study had technical centers in over eight countries. Engineers at each technical center developed vehicle architectures upon which different car or truck models (called programs) can be based. Engineers at these technical centers were responsible for designing vehicle parts and sub-systems, assembling those parts and sub-systems into a complete computer model of the vehicle, simulating various scenarios to test the performance of the vehicle on parameters (e.g., safety, noise, durability, and fuel economy), redesigning parts and subsystems to increase their performance and, finally, testing the actual built vehicle against the results generated in the simulations. Engineers were typically hired either from other automotive companies, or out of structural and mechanical engineering programs at universities. They were normally hired in cohorts and the entire cohort was split into engineering specialties, and trained on the use of the specific engineering methodologies and technologies normally used in that specialty. Each of IAC's technical centers conducted its own training of newly hired employees.

To efficiently balance engineering workload on complex projects, IAC encouraged technical centers to share engineering design and analysis work with one another. In this paper, we focus the analysis on the work of engineers in Mexico during 2006. The Mexico center was chosen, because engineers there worked interactively with engineers in both the US and in India. Thus, we were able to capture the separate global workplace interactions of one set of engineers (in Mexico) with engineers from two other countries (the US and India). When engineers were sending work to a different country, they interacted with individuals in that country regularly via email, telephone, NetMeeting, and instant messaging—sometimes as many as three times a day. Engineers from different countries almost never met face to face. All cross-country interactions were conducted in English, and engineers in all three locations spoke English at a relatively high level of fluency. The Mexico center was an average-sized technical center at IAC and was 15 years old at the time that data collection took place. The US center was IAC's largest engineering center. Formally established in the 1950s, it was considered as the central engineering location of the company. The India center was IAC's newest engineering center. At the time of this study, it was only three years old, but due to low labor costs in India and IAC's interest in increasing sales in the local market, the India center was the third largest in IAC's global product development network after the US and German centers. The office spaces in which engineers work in these three countries looked identical. Engineers were assigned to cubicles in large open rooms. Engineers sat next to other engineers who did similar kinds of work (e.g., aero-thermal analyses) for the same vehicles (e.g., a large truck).

We conducted semi-structured interviews (30–60 min duration) with 28 engineers, who represented 94% of the engineers working with both the US and India centers at the time. In addition to interviews, in-depth observations were conducted of a randomly sampled subset of those engineers who were currently working with both centers. In total, we spent 2½ months observing the work of six engineers at the Mexico center. Each engineer was observed for three separate 3–5 hour sessions, for a total of 94 hours of observation. We also observed engineers in the US and in India who worked with the Mexico center. In the US, 4 months were spent observing 12 engineers (each for 3–5 hours on three separate occasions) for a total of 126 hours of observation. A total of 4 person-months of observation were completed of 11 engineers at the India center (each for 3–5 hours on three separate occasions) for a total of 107 hours of observation. The analyses of these data sources proceeded in two sequential phases. Below, we describe the specifics of data collection and the analysis stages used in each phase.

Phase 1: Interview Data

Collection

Interviews conducted with the Mexican engineers who worked with engineers in both the US and India were aimed at generating insight into two areas: (1) what stereotypes, if any, Mexican engineers had of US and Indian engineers and (2) what

stereotypes, if any, Mexican engineers felt that the US and Indian engineers held about them. To explore these issues informants were asked general questions like "What are some of the major benefits and challenges to working with engineers in other countries?" Throughout the interview we moved to more specific questions like "Do engineers in the US and India build and analyze simulation models in the same ways you do?" and "What impressions do you think engineers in the US and India have about the way you do your work?" We did not ask specific questions about occupational stereotypes so as to not bias informants' answers to align with our research questions (Kvale, 1996). Mexican engineers were also asked about how they normally conducted their routine model building and analysis practices, and how they interacted with other Mexican engineers.

Each interview was audio-recorded on a digital recorder with the informant's permission. With the digital recorder running, the observer was free to take notes on a sheet of paper about items that informants mentioned which were of interest and questions that remained unanswered. All recorded interviews were later transcribed verbatim.

Analysis

The goal of analyzing the interview data was to uncover what practices Mexican engineers felt characterized their normal style of work, what stereotypes Mexican engineers held about engineers in the US and India, and what stereotypes Mexican engineers believed the US and Indian engineers held of them. To fulfill this goal, we employed four steps of analysis.

In Step 1, we flagged all instances in the interviews in which Mexican engineers discussed their styles of working—both alone and with other engineers in Mexico. For example, engineers mentioned that they often consulted their colleagues in Mexico, when they did not know how to use a piece of software, or were not sure what the results of a particular analysis were suggesting. Also, engineers mentioned that they often did not start building simulation models from scratch; rather, they examined models that their Mexico colleagues had built in the past to learn best practices from them. In Step 2, we constructed codes representing the variety of work styles identified in Step 1. These first two steps of analysis allowed us to characterize the styles in which Mexican engineers believed they worked.

In Step 3, we flagged all instances in which Mexican engineers discussed the work styles of US and Indian engineers, as well as what they believed the US and Indian engineers thought about the work styles of engineers in Mexico. In Step 4, we followed Gibbs' (2009a) metaphor of culture as a kaleidoscope of memberships held by organizational members. We sorted our codes from Step 3 into the membership categories of national culture, corporate culture, occupational culture, sociodemographic culture, and micro-organizational culture as outlined by Gibbs (2009a, p. 92). Using this taxonomy of cultural dimensions allowed us to take a nuanced view on culture and, therefore, to understand why certain cultural differences may or may not

be triggered in particular circumstances, as well as the relations between those cultural dimensions and status dynamics.

Finally, in Step 5, we compared the codes generated in Steps 2 and 4 to identify the broad dimensions upon which the Mexican engineers believed that engineers in the three countries differed. After some consolidation of codes, three "stereotype dimensions" emerged: *Consultation*, *collaboration*, and *innovation*. The analysis suggested that the Mexican engineers believed that their style of working on these three dimensions was different from the US and Indian engineers' styles of working, which were similar to each other on these three dimensions.

Phase 2: Observational Data

Collection

Observations of the engineers in all three countries were conducted with the goal of compiling a complete record of all the actions they took to accomplish their work tasks. We reasoned that if engineers' actions were being activated by occupational stereotypes we would see evidence of these stereotypes and engineers' responses to them best in their normal work behaviors. It quickly became clear that to complete their work tasks, engineers needed to spend a lot of time interacting with their coworkers (both at their respective technical center and abroad) to successfully build and analyze simulation models of vehicle performance. Engineers also spent much of their time alone at their computers working with various simulation software applications. Thus, fieldnotes captured the broad range of solo and group interactions that engineers conducted in their work. In Mexico, engineers normally spoke Spanish when communicating with one another. Fieldnotes were taken in Spanish and were later translated into English for analysis.[1] In the US and India, all workplace interactions were conducted in English.

We captured the interactions that occurred in each observation in a number of ways. The researcher sat behind the informants at their desks, while they worked and followed them when they went to meetings and talked informally with colleagues. During all of these activities, notes were taken on a small laptop computer, indicating the types of activities that the engineers were conducting, why they conducted them and with whom or for what they were interacting. Additionally, all these observations were recorded on a digital audio-recorder. Using audio-recordings allowed us to document the conversations engineers had and to capture their personal thoughts about different matters. We also let the audio-recorder continue recording when engineers were working silently at their computers. All of the audio-recordings were transcribed verbatim. Later, these audio recordings of dialogue were integrated with the fieldnotes. By using the digital time stamp on the audio-recorder in conjunction with the observation records we were able to document how long informants worked on particular tasks. The combined observation records (fieldnotes with corresponding dialogue) for one observation were normally between 20 and 30 pages of single-spaced text.

Analysis

Analysis of the observational data proceeded in six steps. Steps 1–2 were conducted to uncover how Mexican engineers normally performed their routine work tasks. Steps 3–4 were conducted to identify what Mexican engineers communicated to US and Indian engineers about how they conducted their work. Step 5 was conducted to uncover why Mexican engineers communicated the things they did in their interactions with US and Indian engineers, and Step 6 provided insight into what US and Indian engineers thought of Mexican engineers after their interactions with them.

Step 1 dealt only with the observation records compiled on the work of engineers in Mexico. We flagged, in each of these observation records, all instances in which Mexican engineers worked alone or with other Mexican engineers, but not any instances in which they interacted with US or Indian engineers. In Step 2, codes were placed on the instances flagged in Step 1 that corresponded to the three stereotype dimensions of consultation, collaboration, and innovation identified in Step 5 of the interview data analysis. For example, we looked in the data for all instances in which Mexican engineers had to make a decision and coded the path they chose (e.g. consulting a manager or another engineer or making the decision by themselves).

In Step 3, we dealt with all the observation records—those created of engineers working in Mexico, the US and India. We flagged all instances in these records, where Mexican engineers interacted with other Mexican engineers (43 interactions), Mexican engineers interacted with US engineers (21 interactions), and Mexican engineers interacted with Indian engineers (29 interactions). In Step 4, we used the three stereotype dimensions identified in the Step 5 analysis of the interview data and coded what Mexican engineers communicated to other Mexican engineers and to US and Indian engineers on what they did on each of these three dimensions. Next, we compared the findings from Steps 2 and 4 to determine what specific practices Mexican engineers actually performed when doing their work (what we call "actual practices") and what practices Mexican engineers told other Mexico, US or Indian engineers they had performed (what we call "communicated practices").

In Step 5, we coded all of the justifications that Mexican engineers gave for why they had told Mexico, US, and Indian engineers that they performed certain practices, and in Step 6, we coded all reactions that Mexico, US, and Indian engineers gave to the communication of work styles made by Mexican engineers. These analyses allowed us to learn why Mexican engineers engaged in the types of communication that they did.

Findings

The findings are presented in three sections. The first section shows that Mexican engineers held strong stereotypes about how US and Indian engineers worked and also that they believed US and Indian engineers held strong stereotypes about them.

The second section demonstrates that Mexican engineers accurately communicated their actual work practices to other engineers in Mexico and to engineers in India, but told US engineers that they worked in ways that they had not. Mexican engineers misrepresented their work styles to US engineers because they perceived the US engineers to be of higher status and, consequently, thought that they should try to align their work styles with stereotypical imagery of what makes a "good US engineer" so that the US engineers would think highly of their work. The third section describes why negative consequences arose when Mexican engineers attempted to present themselves in the stereotypical image of the US engineer.

Occupational Stereotype Recognition

On average, Mexican engineers reported 3.4 years spent working with engineers in the US and 2.6 years spent working with engineers in India. Analyses of the interview data indicate that Mexican engineers held a strong stereotype that conflated the national culture and occupational cultural identities of colleagues abroad. As one informant noted:

> When you work with someone in a different country there's going to be things that are just different. There are different ideas about what it means to be an engineer. It's not like they respect authority more than we do or they're more group oriented than we are, it's not just cultural. It's that there are different ideas about what it means to do the kind of work we do and that's very much infused by some cultural practices. The culture and the profession are hard to untangle. It's just different to be an engineer in different places.

Interestingly, Mexican engineers felt that they worked in ways that were different from how engineers in other countries worked, but they did not perceive large differences between the ways that engineers in the US and engineers in India worked, particularly on the dimensions of consultation, collaboration, and innovation.

Consultation

The first dimension of practice that Mexican engineers felt characterized the work style of an engineer was his or her orientation toward consultation and advice seeking with others. In 83% of the interviews, informants discussed how they actively sought advice and counsel from others when they encountered problems they did not know how to solve or questions they did not know how to answer. As one informant commented:

> Here in Mexico we're always talking to each another. That's how you learn and how you make sure your work is high quality. If you have a problem, you ask around and get advice about how to solve it. People expect that you're going to do that and they're open to it. They expect you'll do it too.

However, informants believed that engineers in the US and India did not hold the same orientation toward consultation. About 94% of informants mentioned that US engineers typically refrained from consultation with colleagues and attempted to

solve problems on their own while 76% indicated that Indian engineers also staved off consultation if they could. One informant was particularly adamant about US engineers wanting to work alone to take credit for their work:

> A lot of times we see that they [the US. engineers] won't ever talk to anyone about what they're doing, even if they don't know what they're doing. If they have a problem or they have some guess that using a nodal body merge is better than just using a 2T weld[2] they'll just do it and won't ask even if they don't know because they just hope it works and they want to tell people they figured it out all by themselves.

In short, Mexican engineers felt that they were not only amenable, but also eager to consult with others, while engineers in the US and India were not.

Collaboration

A second dimension of practice that Mexican engineers believed separated them from US and Indian engineers was collaboration. About 88% of informants indicated that they regularly collaborated with fellow Mexican engineers. Typically, engineers collaborated by sharing results of prior tasks and models they used to run analyses. Collaboration, in this sense, occurred both actively and passively. Mexican engineers would ask coworkers if they would share files, best practices, and specialized procedures for building and analyzing models. They would also share passwords to folders on which they stored their work so that others could enter and review their models at their leisure. One informant commented that these active and passive collaboration mechanisms were widespread:

> Here we all have a sense that we work together and we share things. It's not like this is mine or that's yours. We all expect that people will be going through our files and borrowing things that we did or asking about them. If someone didn't share it [their password] or asked you why you were looking at their models that wouldn't be very cool.

By contrast, Mexican engineers believed that US and Indian engineers were opposed to collaboration and sharing work. About 84% of all informants made some mention of the individual perspective that US and Indian engineers took toward their work. Statements like the following were common:

> I've had similar experiences working with Americans and Indians. They don't want to share things with you. They want to be the owners of their work. They go to lengths to tell you that this is theirs and not someone else's. That's a different mentality to how we work. They would never tell me the directory where their model was so I could look. I'd have to send them a formal request and then they'd probably even say no.

Although most Mexican engineers made sure to mention that they placed no value-judgment on US and India's engineers' lack of interest in collaboration, there was a common lament in their voices that they did not choose to share more and be open to building on others' work.

Innovation

The third dimension upon which Mexican engineers felt that they were different from US and Indian engineers concerned innovation in work process. One Mexican engineer summed up this difference succinctly:

> IAC has a lot of standard work guidelines for model building and analysis. When you're doing simulation work you should follow these guidelines because they've been shown to lead to robust models or results. Everyone here [in Mexico] follows the guidelines closely. But they [US. and Indian engineers] don't want to follow them. They want to all come up with some new way to do it that's better than the standard work and they're always inventing new practices and telling you that what's in the standard work is not good enough for them.

About 73% of Mexican engineers mentioned that they routinely followed standard work procedures and 68% mentioned that US and Indian engineers did not. Mexican engineers clearly felt frustrated that their counterparts in other countries often disregarded company-endorsed standard work practices claiming, as one informant did, that by ignoring those practices US and Indian engineers "make you feel like you're not doing things right when you are following the company policy."

Consultation, collaboration, and innovation were three dimensions upon which Mexican engineers felt that they worked differently than US and Indian engineers. IAC's requirement for cross-center projects put into relief for many Mexican engineers not only that engineers in other countries worked differently than they did, but also compelled them to notice that US and Indian engineers held stereotypes about the way they worked. As one informant recounted:

> You get the sense when you communicate with people in other countries that there's a stereotype about what the Mexican engineer is like. According to the Americans and the Indians we're all a little bit lazy because we don't start things from scratch and we spend all day talking because we're always working together on things. We're also not smart enough to come up with new ways of doing things. At least that's what they think. I've started to realize that they have these conceptions about us through little things they say and do when we talk to each other.

Thus, Mexican engineers began to believe that US and Indian engineers held strong stereotypes about them that were both pejorative and incorrect.

Perceived Status Differences and Attempts at Stereotype Maintenance or Correction

When two or more engineers at IAC gathered to discuss whether a simulation analysis showed desired increases in vehicle performance, whether certain parts or subsystems had to be redesigned, or whether the simulation model correlated with the results of a physical test, there was a strong company-wide norm for individuals to explain the processes they went through to arrive at their conclusions. As one US engineer observed, "We [engineers] always get criticized for being bad communicators. But you just can't be a good engineer here [at IAC] or anywhere if you can't communicate clearly about what you did to get your answer." This sentiment

resounded strongly at all three engineering centers included in this study. Consequently, it was not surprising to find that most workplace interactions among engineers consisted of some amount of time spent in explanation of the processes that were used to arrive at a particular result. Mexican engineers, like all others at IAC, spent a significant portion of time engaged in communication of this kind with both their colleagues in Mexico and their colleagues in the US and India.

Table 1 illustrates the correspondence between the practices that Mexican engineers actually conducted, and the practices they told others that they conducted, along the three stereotype dimensions summarized in the previous section. The first column presents the stereotype dimensions summarized above. The second column presents Mexican engineers' actual and communicated practices, taken from the observations of them at work, which correspond to each of the three dimensions. The third column indicates the number of times each of the practices indicated in the second column was conducted by Mexican engineers in their actual work. Columns 4–6 indicate the number of times that Mexican engineers told their colleagues in Mexico and engineers in the US and India that they conducted each of these practices.

The table reveals a surprising finding. Mexican engineers' actual and communicated practices were aligned when they talked with their counterparts in Mexico and in India, but were not aligned with what they told engineers in the US they did to arrive at their results. In other words, it seems that Mexican engineers were honest with other Mexican engineers and Indian engineers, but not entirely forthcoming with engineers in the US Specifically, corroborating the testimony made in their interviews, Mexican engineers seemed to often seek advice from others to find solutions to problems more often than they decided on a solution alone; they built on others' work by using their models and related simulation outputs more frequently than they started work from scratch without help from others; and they almost always followed the procedures recommended for model building and analysis in IAC's standard work guidelines and rarely ever attempted to devise a new procedure on their own. Mexican engineers told other Mexican engineers and Indian engineers that they worked in these ways. But they did not tell US engineers the same thing. Instead, they often told US engineers that they decided on solutions to difficult problems on their own, that they started building and analyzing models from scratch, and, most startlingly, they were twice as likely to say that they attempted a new procedure instead of following standard work guidelines to arrive at their solution.

What accounts for the similarity in actual and communicated practice with Mexico and India colleagues and the discrepancy between actual and communicated practices with US colleagues? Data analysis suggests that perception of status differences is likely an important factor. For example, the following statements that two Mexican engineers made in interviews in response to the question, "What are some of the major challenges you face when working with engineers in other countries?" illustrate the recognition of status differences:

> **Engineer 1:** There is a major pecking order at IAC in terms of engineering centers. The US. and Germany centers are considered the best and then Australia is up there

Table 1 Summary of Mexican engineers' actual and communicated practices

		Actual practices			Communicated practices					
					Mexico to Mexico		Mexico to US		Mexico to India	
		21 Observations[a]			43 interactions		21 interactions		29 interactions	
Stereotype category	Practice (actual or communicated)	N[b]	n	%	n[c]	%	n[c]	%	n[c]	%
Consultation		33								
	Decide on solution alone		11	33	5	12	13	62	1	3
	Seek advice to find solution		22	67	27	63	5	24	16	55
Collaboration		26								
	Start work from scratch		8	31	0	0	16	76	0	0
	Build from other's work		18	69	34	79	2	10	5	17
Innovation		19								
	Attempt new procedure		1	5	3	7	12	57	0	0
	Follow existing procedure		18	95	18	42	6	28	17	58

[a]One Mexican engineer shadowed per observation. Average duration of observation = 4.5 hours. [b]Numbers in this column represent instances across all observations. Some rows show more practices than the 21 observations because there were, occasionally, multiple practices enacted in a single observation. [c]Numbers in these columns do not sum to total number of interactions observed because engineers did not communicate each practice in every interaction.

> and then Sweden. We [Mexico] and Brazil are farther down, but not as low as India and Korea. That's just something everyone knows. It's not accurate in terms of skill, but it's the perception.
>
> **Engineer 2:** One thing is that you feel lower status compared to engineers, like in the US. because I think they don't believe that we're as good engineers so that's hard. But we definitely feel that with places like India too—that they're not as competent as we are.

These quotes, illustrative though they may be in demonstrating that Mexican engineers perceived that they were low status compared to US engineers, but higher status than Indian engineers, do not explain why they would tell Indian engineers what they did when they were working and mislead US engineers. The analysis of the interactions between Mexico and the US and India centers begins to shed light on this issue.

Consider the following example of an interaction between two Mexican engineers and a US engineer that transpired via a conference call. The Mexican engineers (Mateo and Pedro) have been conducting two different crash tests for a compact car. Mateo has been conducting a side impact analysis (a vehicle runs into the side of the car) and Pedro has been conducting a quasi-static roof crush analysis (simulating the impact of a roll-over). We observed the two engineers over a two-day period sharing models and asking each other questions about their related analysis. At one point, Mateo sat down at Pedro's desk to help him optimize the finite element mesh that the supercomputer used to calculate intrusion into the occupant compartment.[3] After finishing their respective analyses, Mateo and Pedro met in a private conference room and sat down next to each other for a scheduled call with Bill, the US engineer:

> **Bill:** Walk me through the 208 analysis. It looks like there are issues with the mesh warpage on the roof rails.[4] Who have you been working with on this?
>
> **Pedro:** No one. What do you mean about the issues?
>
> **Bill:** I think you're having problems correlating the model because the mesh just on top of where the b-pillar connects looks kind of funky. Did you look at the old 208 model I sent over for Theta?[5]
>
> **Pedro:** [*Pedro glances nervously at Mateo and Mateo shakes his head "no"*] No. We just put this one together based on how we thought it would work best.
>
> **Bill:** Well there's definitely some problems with it. Let me fix it and I'll send it back to you so you know what to do.

After the meeting Mateo was asked why he shook his head "no" at Pedro when Bill asked if he looked at the older model when just the day before both he and Pedro were looking at it. He replied:

> They [US. engineers] are always asking things like that. They think we just copy old models without ever thinking about it. We have good reasons for building the models like we do and we know the warpage is the problem there. But that's why they ask if we look at the model because they think we don't know how to do it ourselves so we need them to know that we can build good models without copying. But of course we look at the models. But we just say no we don't. The irony is I'm sure he wouldn't look at them if we sent them.

As this example illustrates, Mexican engineers were often cautious about what they admitted to US engineers, because they were afraid that US engineers would look at their normal work practices and mistake them for lack of knowledge.

As Mexican engineers intimated, US engineers held stereotypes about how Mexican engineers worked and those stereotypes were part of the reason that, as one informant put it, "they think we're not as good engineers as them and they think they're higher status." To combat this problem, Mexican engineers told US engineers that they worked in ways they believed were in line with the stereotype of the US engineer. As another informant said, "We know how US engineers work and they think that's the best, so sometimes that's what we tell them we do." In other words, Mexican engineers worked to maintain the dominant stereotype they perceived about what made a "good US engineer" and show US engineers that they actually embodied it so that they could reduce the status deficit by leading US engineers to believe that they approached engineering work just like US engineers did.

Mexican engineers also perceived a status difference relative to Indian engineers; they believed that they knew more about automotive engineering work and were more competent at difficult engineering tasks than their Indian colleagues. As one Mexican engineer said, unabashedly, "The India center has a long way to go. We need to really teach them a lot. They just don't have good product knowledge and they make a lot of mistakes." Because Mexican engineers viewed themselves as higher status, 71% of all informants acknowledged that it was their responsibility to teach the Indian engineers how to improve the quality of their work.

One example of this belief in practice can be seen in an interaction between a Mexican engineer (Luis) and an Indian engineer (Sudhir). Luis and Sudhir had been working together for several weeks on a project to reduce vibration in the front end of a large pick-up truck, which was one of IAC's best selling vehicles. One morning, as Luis was preparing to call Sudhir for an update on the results of their latest simulation runs, he mentioned, "He [Sudhir] has been having some problems with this model. He's not following the [standard work] guidelines. I'm going to have to talk with him about it." Luis picked up the phone to call Sudhir and opened NetMeeting on his workstation. He and Sudhir talked about the model for a few minutes before Luis stated:

Luis: I've been working with Borja [another Mexican engineer] on this and we followed the procedures for representing the body mount dampers from the [standard work] guidelines. Why did you represent them with shell elements instead?

Sudhir: I thought they might not break away in the run if we did it like **that.**

Luis: You should really follow the [standard work] guidelines on this. Don't try to invent a new way. They are good procedures for us to follow. Did you ask Himanshu [Sudhir's boss] about what you should do?

Sudhir: No. I just decided it based on some past work I did.

Luis: You should talk to Himanshu because he probably knows that they [standard work guidelines] are better too. Go ask him next time.

After a few minutes of further discussion, Luis hung up the phone, turned to the researcher observing him, and said:

> Over there in India they're trying to just invent new ways of doing things and not following procedures. They probably get that from the US center and the German center. Plus they're kind of individualistic there in India. We've got to try and fix that and get them to follow standard work so they can keep improving.

As Luis stated, Mexican engineers often felt it was their responsibility to correct what they viewed as poor work styles conducted by Indian engineers. In his interaction with Sudhir, Luis straightforwardly admonished him to follow existing best practice procedures instead of trying to invent a new procedure and also to consult with his manager, as opposed to trying to figure out by himself why he was having problems with his model. In their interactions with Indian engineers, Mexican engineers, like Luis, were most often outspoken about which of their work styles Indian engineers needed to change. Their everyday practice of "teaching" Indian engineers new work styles was an overt attempt to correct the Indian engineers' perceptions that a "good engineer" had to embody the occupational stereotype of the US engineer.

Consequences of Communicated Practices

Mexican engineers' choice to either maintain (with US engineers) or correct (with Indian engineers) what they perceived as ways of working aligned with the stereotype of the "US engineer" was not without consequence for their global workplace interactions. In this section, we demonstrate how US and Indian engineers reacted to Mexican engineers' communicated practices during task-based interactions and the effects that these reactions had on the ongoing working relationships between the centers.

As documented above, Mexican engineers believed that US engineers held stereotypes about the "Mexican engineer" as someone who "didn't start things from scratch," often spent time "working together on things," and who was "not smart enough to come up with new ways of doing things." At no point in observations with US engineers did anyone openly refer to a Mexican engineer by using any of these stereotypes. Instead, one US informant echoed the more commonly held view of the Mexican engineer:

> Mexican engineers are pretty good. They've come a long way. But they still have some problems. Like they're always trying to come up with new procedures for things and they never spend time talking with their colleagues who are more experienced, which they should do—like asking questions—because there is some real expertise down there that they're missing out on.

Interestingly, US engineers did not hold the stereotypes about Mexican engineers that Mexican engineers thought they did. Instead, US engineers talked about the Mexican engineers' work styles in very much the same way that Mexican engineer talked about US engineers.

The data show two important mismatches that have consequences for global work. The first mismatch is between the stereotype Mexican engineers believed that US

engineers held about them and the US engineers' actual perception of their work styles. The second mismatch is between the ways that Mexican engineers actually worked (as documented through observations) and the ways that US engineers thought Mexican engineers worked. This first mismatch, coupled with Mexican engineers' perception of a deprecated status position relative to US engineers, led Mexican engineers to tell US engineers that they worked in ways they had not. Absent any visibility into how Mexican engineers actually accomplished their work tasks, US engineers relied on Mexican engineers' reports of their work practices to form impressions about how effective Mexican engineers were at automotive product development work. These emergent perceptions brought consequences to the continued intercultural relations between the two centers.

One interaction episode between Victor, a US engineer, and Rafael, a Mexican engineer, provides a clear example. Victor and Rafael were working on an analysis of whether a power inverter installed between the two front rails of a pick-up truck's chassis was affecting the vehicle's crashworthiness. As Victor and Rafael discussed the results of an analysis via telephone, Rafael told Victor about how he accomplished the work:

> **Rafael:** I stayed until 8 last night to finish up iterations 42–48.
> **Victor:** Thanks for doing that. But why didn't you ask Guillermo (a team member in Mexico) to help you to get them done quicker?
> **Rafael:** Eh, he doesn't know it so good so it's better if I just do it myself. It gets better results that way.
> **Victor:** He seems to know it pretty good. He worked on this at the last mid-cycle enhancement.
> **Rafael:** Well, it's better this way.

After the conclusion of their phone conversation, Victor turned to the researcher observing him and said:

> I don't know why they always do this. He should just get help from Guillermo instead of doing it himself. I think Guillermo probably knows how to do this better. It's stupid. I mean he was already two days late doing this so he should have brought someone else in. I think I'm going to work with someone else next time who's better at finding people to help or delegating the work. I don't care how it gets done. Just get it done on time.

As is clear from his response, Victor was upset because he believed that Rafael had not asked for help on the project, opting instead to do the work himself. Victor believed that his refusal to ask for help caused Rafael to deliver the project late and, consequently, Victor vowed to not work with him again. A month later, Rafael reflected on this interaction with Victor:

> I had been working with Guillermo on it. But it was too big for the deadline because the model had all kinds of problems with it we had to fix, like penetrations.[6] But if I tell him that Guillermo was doing it and we still couldn't' get it done they will think we're incompetent—like lazy Mexicans—that's why he asked who I was working with. So it's better to just say I was doing it and take the blame for it being late. It's more understandable to be late with only one person working on it.

Across the 14 interactions between US and Mexican engineers that were observed from the vantage point of the US center (the remaining seven interactions between the US and Mexican engineers were observed from the vantage point of the Mexico center), the data showed eight episodes like the one illustrated above in which a Mexican engineer led a US engineer to believe that he/she had worked in a certain way and the US engineer responded by developing the opinion that the Mexican engineer was either foolish or incompetent for choosing to work that way. The immediate consequence in all eight episodes was that the US engineer vowed to not work with that Mexican engineer again if he/she had the choice. The long-term consequence was that the US engineers developed negative impressions of the capabilities of their colleagues from Mexico. US engineers reported these negative impressions to their managers who often instructed them to work with engineers elsewhere in the company (e.g., Australia or Brazil) instead of Mexico. One perceptive US engineer reflected on this problem:

> It just seems like the Mexican engineers have some weird idea about what a good engineer should do. It's like they're following some stereotype about computer scientists who code for three months all by themselves in a garage and then come up with some new great program. That's not how we work here. We value collaboration and learning from other people. You ask for help if you need it to get the work done. If they're not doing this, eventually they're not going to get good work from us and they won't be able to learn.

Mexican engineers' decision to communicate their actual practices to Indian engineers had much more positive consequences. As one senior engineer in India commented:

> We're the newest engineering center at IAC and we need to learn from everybody. I notice a difference when I work with a Mexican engineer and an American engineer, for example. For one thing, the Mexican engineer is always telling [me] to ask questions to others and to build off other people's work. So we do and we ask the Mexican engineers many questions. We don't do that with the American engineers.

Indian engineers remarked that they learned more when working with Mexican engineers than with US engineers because the former encouraged and engaged them in collaboration and interaction while the latter did not. Consequently, as one Indian engineer noted, "I can see that in a few years we'll be equals in skill to the Mexican engineers because of their help and because of this we sometimes try harder on projects for them than for people in the US".

Discussion

At least three findings from this study have important implications for theory about and management of global interactions in the workplace. The first finding is that, within a particular occupational community, individuals form stereotypes about the way their colleagues in other countries work, and of how they themselves work which confound occupational and national culture membership identities. The second

finding is that when individuals believe that work practices are distinct across cultures, perceived differences in status can activate behaviors aimed at either reconciling those divergent stereotypes or maintaining them. The third finding is that pursuing strategies aimed at maintaining or correcting stereotypical work practices can have important consequences for attributions of competence and skill, and, in time, may affect the ongoing nature of global work.

Activation of Occupational Stereotypes

Most research on the effects of stereotypes on individual behavior is conducted in the laboratory, where researchers activate particular stereotypes (e.g. race, ethnicity, age) and examine how research subjects respond (Wheeler & Petty, 2001). Consequently, our understanding of what situations or processes activate stereotypes in the workplace is quite limited. The findings presented in this study demonstrated that individuals sometimes form stereotypes of people working in other countries when, during interaction, they hear explanations proffered by those people about how they accomplished work tasks and those explanations seem markedly different from how the individual hearing them works. As the literature consistently shows, individuals who are separated from their work colleagues by great temporal and spatial distances have few opportunities for the type of interpersonal interaction that individuates their communication partners and creates strong social bonds (Gelfand et al., 2007; Kankanhalli, Tan, & Wei, 2006). Moreover, the fact that most communication on global teams happens today via technologies, which make rich social interaction difficult, decreases the likelihood that individuating interactions will occur (Hinds & Bailey, 2003). And as theorists suggest, without interactions that help people to individuate one another, stereotypes are likely to be used to deal with the cognitive complexity of interacting with unknown others (Fiske, 1993; Macrae, Milne, & Bodenhausen, 1994). Our data provide a clear illustration of this seeming paradox, as engineers in Mexico and in the States interacted as many as three times a day, but did so in a stereotypical way because of the formal and task-based nature of their collaboration. Thus, when managers decide to promote cross-country interaction in the global organization amongst individuals who are not well known to each other, they may be creating a fertile environment for culture-based occupational stereotypes to grow.

Of course, creating fertile ground is no guarantee that growth will occur. In this study, occupational stereotypes were activated when Mexican engineers perceived that their counterparts in the US or India worked differently than they did. Recognition of such differences led them to the conclusion that US and Indian engineers must notice these differences too and, consequently, think of the Mexican engineers in stereotypical ways. Such projected thinking encouraged Mexican engineers to consider what stereotypes others must hold of them and react. Such a finding aligns with extant research showing that stereotypes may affect both how individuals treat one another and how they view themselves (Goff et al., 2008; Yoon & Hollingshead, 2010). But these findings push the extant literature forward by demonstrating that

such processes are related—not separate as they are traditionally viewed. Mexican engineers only questioned what others thought of them as they themselves thought about their perceptions of how colleagues in other countries worked and realized that others must hold perceptions of them as well.

These findings suggest that stereotype activation is a process involving the reciprocal construction of self- and other-stereotypes as individuals draw from their available cultural repertoires. As people form stereotypes of others, they may begin to wonder what stereotypes others hold of them. Such recognition can lead to reflexive monitoring of one's own practice that occasions behaviors attempting to confirm or negate the perceptions he or she believes others hold of him or her. In short, to understand why people act the way they do, we may be well advised to focus on the degree to which they stereotype others.

Perceived Status Differences and Communication of Behavior

Perhaps the most surprising finding from this study is that perceived status differences shape behavior in important ways when individuals hold stereotypes of others and believe that others hold stereotypes of them. The literature on stereotypes in interpersonal interaction has had a great deal to say on the role of power and status in shaping behavior. A strong stream of work argues that people who hold high status positions are likely to engage in stereotyping, because they have little interest or motivation to learn the specifics of those with whom they interact, or they are so busy that it would take too much time and cognitive processing to learn individuating information that would keep stereotypes at bay (Fiske, 1993; Galinsky & Moskowitz, 2000; Goodwin, Gubin, Fiske, & Yzerbyt, 2000). Such intentions held by, or pressures placed on high status individuals decrease the likelihood that they will become familiar with others, which is hypothesized to reduce one's reliance on stereotypes to guide interaction. But little attention has been paid to the way that status affects the behavior of those who feel stereotyped.

In this study, Mexican engineers recognized that the stereotypes they believed others held of them did not align with the stereotypes they held of US and Indian engineers. Mexican engineers also perceived that US engineers felt that they held higher status than Mexican engineers, in large part because they believed US engineers negatively stereotyped their work styles. Thus, because Mexican engineers wanted US colleagues to treat them as status equals, they told US engineers stories about the way they worked that were not entirely true, but were aimed at making US engineers think that Mexican engineers did not work in a stereotyped way. Put another way, Mexican engineers told the US engineers what they believed the US engineers wanted to hear. By contrast, Mexican engineers were forthcoming with Indian engineers about the way they worked. Because they felt they were higher status than the Indian engineers, Mexican engineers believed that they could shape the way Indian engineers worked if they led by example.

Several recent studies have documented tremendous status imbalances that threaten the successful completion of work in global organizations (e.g. Levina & Vaast, 2008; Metiu, 2006). Previous research has shown that status imbalances can arise when global teams are staffed with core members and then receive additional support from temporary team members from other countries, thus resulting in in-group/out-group status delineations (Gibbs, 2009b). With the increase of global organizational arrangements, such as offshore sourcing and the foundation of business units in countries with little experience in the company's product domain, organizations are likely to see an increase in perceived status differences among employees. This study suggests that if those perceived status differences align with occupational stereotypes, individuals may feel compelled to either change their behaviors in an attempt to achieve higher status or, as occurred in the research presented herein, change what they tell other people about their behaviors. Consequently, the self-perpetuation of occupational stereotypes may impede teaching and learning in organizations because individuals do not communicate what they actually did to complete a work task; instead, they feel compelled to communicate information confirming what they think others wanted them to do to complete tasks. When communication is distorted in this way, it is difficult for the organization to have a strong sense of what types of behaviors are truly effective in completing important work tasks.

Stereotypes, Culture, and Status: Effects for Ongoing Working Relations

As the data presented above show, engineers in different countries had slightly different ways of working and orienting toward the occupational role of engineer. These differences were largely the product of different mixings of the kaleidoscopic reservoir of cultural identities available for them to draw on to construct meaning about their work (Gibbs, 2009a). The Mexican engineers, at least, used these cultural reservoirs to produce and sustain stereotypes of engineers in other countries, as well as perceptions of how engineers in other countries stereotyped them. Consequently, our findings suggest that the communicative behaviors that perceived status differences produce may have important long-term effects on working relations in global organizations. US engineers in this study noticed that Mexican engineers often told them that they worked alone, did not follow work guidelines, and refrained from consulting with others about work. Consequently, US engineers began to form impressions that Mexican engineers were not thorough, competent, or committed to the success of projects. The irony, of course, is that Mexican engineers did work collaboratively with others, did follow guidelines, and did seek advice from others, but told US engineers that they worked differently than this because they thought that was what the US engineers wanted to hear.

One might think that when working together over time, individuals from one culture would come to realize that the reports their colleagues in another culture make about their work are inaccurate, and that, consequently, stereotyping would

decrease. However, recent research by Smith et al. (2006) demonstrates that when familiarity is decoupled from liking and individuated knowledge, frequent interaction can lead to even more stereotyping than infrequent interaction, because familiar objects receive less systematic analytic processing. The result may be that one's inaccurate communication of his or her work styles, which is done to overcome perceived status differentials, may not be detected by a person from another culture. Instead, individuals may increase their stereotyping and choose, as did the US engineers in this study, to not send work to Mexico, because they believed that Mexican engineers were not capable. To combat this problem, it may be wise for managers to make time and find a budget for global communication partners to visit each other's workplaces occasionally so that they learn how they work and, consequently, refrain from stereotyping based on lack of knowledge. Further, such site visits may stop individuals from forming perceptions that others have stereotyped them, because they will have confidence that a visit to their site has ensured that the visitor now understands that they are competent workers.

Conclusion

As Hinds, Liu, and Lyon (2011) recently observed, most existing research that focuses on communication within global organizations has overlooked the important role that intercultural interactions play in shaping work behaviors. This ethnographic study has shown that, at least for employees in one large multinational corporation, national cultural differences permeate their daily experience of the workplace. However, the data also paint a more complicated picture, in line with other studies showing that national culture is not a sole actor in shaping the actions of global organizational members (e.g. Gelfand et al., 2007; Gibbs, 2009a; Gibson & Gibbs, 2006; Stohl, 2001) by showing that those cultural differences become most salient when they are implicated in occupational stereotypes and activated through the perception of status differences.

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Notes

[1] Both authors are fluent in Spanish.

[2] A nodal body merge is a computational procedure by which an engineer simulates a spot weld by telling the supercomputer that two elements in the model are actually one. A 2T weld refers to using the simulation software to simulate a weld that joins two thicknesses (T's) of steel.

[3] Finite element analysis is a computational technique used to decompose an object into a large (though finite) number of much smaller objects known as "elements." The elements are

considered connected at defined nodes (corner and mid-segment points), and the entire connected system composes a defined structure called a "mesh." The mesh is solved by software (known as a solver) run on a supercomputer.

[4] A "208 analysis" is the name of a roof crush test sanctioned by the National Highway Traffic Safety Administration. Warpage refers to a distortion in the shape of an element that makes its analysis difficult for the solver code run on the supercomputer.

[5] Engineers would correlate their results of finite element analyses with the results of physical tests conducted in the laboratory to verify the accuracy of the simulation model. The b-pillar is the name for the vertical support beam, located between the front and rear doors of the vehicle, which supports the roof. Theta is IAC's code name for one of their vehicle programs.

[6] Penetrations are places in the simulation model where two parts share the same vehicle coordinates. The solver will not run the simulation until such problems are resolved.

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Blurting

Dale Hample, Adam S. Richards & Christine Skubisz

Blurting is production of speech that is spontaneous, unedited, and negative in its repercussions. Study 1 ($N = 230$) analyzed open-ended descriptions of situations in which respondents had blurted and situations in which they had been tempted to blurt but stopped themselves. Coding of those materials supported our essential understanding of blurting. A self-report measure of blurting was developed and produced these findings: Blurters endorsed more messages overall and rejected fewer because of harm to other or relationship; they saw interpersonal arguments in a less sophisticated way, and as less cooperative or civil, but more pointedly emphasized the utility, identity display, dominance, and play goals for arguing; blurters were higher in verbal aggressiveness, indirect interpersonal aggression, psychological reactance, sensation seeking, psychoticism, extraversion, and neuroticism; and they were lower in perspective-taking and lying. People were most likely to blurt when they believed they had high rights to speak in a situation, and were less likely when personal benefits and relational consequences were at issue, or when the situation made them apprehensive. Study 2 ($N = 570$) clarified the psychometric properties of the new blurting scale and established its convergent and discriminant validity when compared to a measure of simple spontaneity in speech.

Keywords: Arguing; Argument Frames; Blurting; Editing; Message Production; Spontaneity

Blurting, saying things spontaneously and without editing, has not often been an explicit research topic in communication. Blurting has been a minor element of various theories of message production, most often by contrast with its opposite, careful planning. Generally, theories have implicitly assumed that blurting does not occur, even though the theorists would probably never have made such a declaration: they simply preferred to study effortfully generated utterances. From Freudian slips (Motley, Baars, & Camden, 1983) to inappropriate witticisms to unthinking remarks

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made in anger, many of us have personal experience of saying things we soon wished we could pull back. We might also say something both spontaneous and clever, but we particularly tend to remember the social disasters, and these are normally what we call blurts. The two studies reported here are initial exploratory investigations of blurting. We begin with the assumption that some people blurt more than others, and we wish to distinguish those people in terms of their individual differences. We will also typify blurts and describe situations in which people almost blurted but did not. The second study clarifies the structure and validity of a newly developed self-report scale for blurting.

Message Planning

Message production studies are dominated by the goals-plans-action model (GPA; Dillard, 2004; Dillard, Segrin, & Harden, 1989). This simple but productive idea is that, upon contact with a situation that might call out communication, people generate social goals, develop plans to achieve those goals, and finally settle on an acceptable plan to use as a blueprint for message actions. The goals, the plans, and the actions are all held to be organized in complex hierarchies, with abstract entries at the top and concrete elements at the bottom (Berger, 2007). A goal might immediately stimulate a plan, but the production process hesitates at this point so that the plan can be evaluated, revised, and perhaps replaced (Berger, 1997, 2010; Meyer, 1997). GPA work either asserts or implies that the first and third parts of the process are spontaneous and only the middle step is cognitively effortful. That is, goals are immediately registered upon contact with a situation (Dillard & Solomon, 2000), and messages are simply performative readings of the plans. Plan development is what is cognitively difficult.

Meyer (1997) studied details of the plan formation and revision processes. She postulated two distinctive elements. The first occurs on contact with the message-stimulating situation. *Situation-action associations* are activated from long-term memory. These are records of what sorts of things ought to be done in recognizable social circumstances. A situation immediately activates an action in one's cognitive system and this is a sort of nomination for the action to be performed. But the proposed message is not theorized to be articulated until it has survived a testing process (Hobbs & Evans, 1980; Miller, Galanter, & Pribram, 1960). Key components of this testing are Meyer's second element, and the *action-consequence associations* are also stored in long-term memory. The proposed message is connected to various outcomes by means of records in one's knowledge base. These outcomes are compared to the immediate social goals and if they violate the goals, the action is supposed to be re-planned. Meyer's research program has repeatedly shown that politeness and other secondary goals influence the messages that survive this testing, and also those that are reconsidered, suppressed, or revised when they fail the consequence-goal comparisons (Meyer, 2001, 2002, 2003).

Quite a lot of the research designs investigating planning have invited conscious work on the part of the planners. People are instructed to generate alternative plans,

to build in branch points to take account of possible choices, to write their plans out, to consider their message choices carefully and rate them on various measures, and so forth. This is unobjectionable but it gives the planning literature a pointed bias in favor of the implication that messages are prototypically planned in a conscious effortful way. Spontaneity and blurting do not have a convenient place in these theories because "the GPA model focuses on *volitional behavior*" (Dillard, 2004, p. 186).

Theorists have tried to deal with spontaneity in several ways. All the approaches have in common that they treat spontaneous utterances as planned, often consciously planned, in some limited but specifiable fashion. Let us review several ways of expressing the matter. Hobbs and Evans (1980) discussed "bi-directional planning." This occurs at a conversational moment in which a speaker considers top-of-hierarchy matters such as one's goal along with bottom-up matters, such as what conversational moves seem to be available in the instant. Ochs (1979) distinguished between planned and unplanned discourse. At the extreme, unplanned discourse would be "a string of nonsensical, haphazard sounds" (p. 55), whereas planned discourse is thought out beforehand. Ochs said that actual conversation tends to be intermediate between these extremes and wrote about actual conversation as being *relatively* planned or unplanned. Waldron (1997) distinguished between preconversational (worked out prior to interaction) and conversational (in the moment) planning and discussed the various sorts of planning that occur in interactive instants. He said that there are three types of conversational or "online planning:" knowledge-based (drawing prefabricated plans from memory), accommodative (adapting the prefabrications to immediate circumstances), and creative. The last requires the speaker "to consciously determine goals for the near or long-term conversational future and construct hypothetical action sequences which move self and other toward those goals" (p. 204). Berger (2007), too, preferred the term "online planning," which he characterized this way: "When individuals are engaged in conversations, plans may have to be instantiated rapidly and any conscious planning must be done on the fly, most likely when individuals find themselves in the listener role" (p. 57). In considering the topic of spontaneity explicitly, Berger (1997, p. 140) assimilated it to planning. Those who "claim" to be acting spontaneously may still be described as having "...a plan, perhaps one that is not consciously available to the 'spontaneous' actors, [that] is guiding their conduct" (p. 43). Another formulation that permits planning to be a bit less carefully tactical and self-aware is that of Hayes-Roth and Hayes-Roth (1979), who characterized planning as "opportunistic:" "...at each point in the process, the planner's current decisions and observations suggest various opportunities for plan development. The planner's subsequent decisions follow up on selected opportunities" (p. 276). Throughout the planning literature we see an insistence that all discourse is planned, and even apparently spontaneous speech is often still held to be planned consciously.

The idea of spontaneity—and blurting, by implication—is not easy to discern in these formulations. These scholars' idea is that, either consciously or unconsciously, our apparently spontaneous actions are directed by the same processes and resources

that are evident when we ask people to perform planning tasks carefully and on purpose. We agree that messages are not random, and that even spontaneous ones are controlled by cognitive contents and known actions (e.g., Greene, 1997). But when some message does not seem to proceed from a preconversational planning session, an imagined interaction (Honeycutt, 2003), or conscious calculation, we think that calling it "planned" in any respect (bi-directional, relatively, online, unconscious, opportunistic) is somewhat presumptive. Spontaneous action should not be *assumed* to be the degenerative result of hasty, resource-impaired, or imperfect planning, and these terminologies do that. It is entirely possible that blurting will in fact prove to be degenerative, and therefore ought to be reconciled to the planning literature as a defective or primitive case. But research is needed to test that thought, and a discrete concept will help us explore those possibilities. We should be thinking about blurting as an affirmative phenomenon, rather than somehow-not-planned messages. The difference is that we would then be studying something conceptualized as having its own nature, rather than some absence or deficiency in something else.

Message Editing

Besides being spontaneous, a blurt is also unedited. Just as we found blurting submerged in the planning literature as not-entirely-planned discourse, we find it in editing research as not-edited discourse. Editing is something that is expected to occur as part of the process of planning a message. Conveniently, the editing literature does make it fairly obvious where unedited activity fits into our theories.

As mentioned above, Meyer's (1997) theory of editing specifies two processes. First, exposure to a message-inviting situation activates actions from long-term memory. Second, these actions each activate their associated consequences, and these consequences are immediately held up against the person's primary and secondary goals for the communication episode. The first process is essential. If it is skipped, no message will be produced. But the second process could conceivably not occur. If it does not, a message activated by the situation's primary goal will be produced without having been checked against secondary goals, such as those involving politeness or identity. Such a message would be unedited. Unedited messages might, by accident, achieve a variety of goals. But having bypassed the process that tests nominated messages against the possibility of goal violation, these messages might also be the unhappy ones that we immediately label as blurts.

Hample and Dallinger (1987) developed a procedure for studying message editing. They provided respondents with a situation and a list of possible messages and asked which messages would they be willing to say and which would they suppress. They also gave a list of reasons for suppression and asked the people to indicate the reason that would explain the suppression. The list of available reactions to each proposed message helps us to see blurting's place in this research. The first choice is endorsement, indicating that the respondent would be willing to say or do the proposed action. Endorsed messages therefore, either survived the editorial process Meyer (1997) described, or were never exposed to it. All the other choices refer to

reasons for suppression. These include estimates of effectiveness, projections of effects on participants or their relationship, and worries about the quality of the discourse.

Blurters say the first (only) thing that occurs to them. Conjoining the Meyer and Hample-Dallinger work, we can see that, compared to people who edit, people who do not edit will endorse more messages, because they are not working through reasons for rejection. For the same reason, they will make less use of the various matters that can be editorial issues, especially identity problems, politeness issues, relational issues, relevance, and/or truth. Since we will be using a trait measure of blurting in this study, we should see a positive association between the blurting measure and endorsement, and negative correlations to at least some of the editorial criteria.

Argument Frames

The final place to look for an understanding of blurting is the work on argument frames (Hample, 2003, 2005). Here, at last, blurting has been an explicit interest, if not a focal one. This research program was designed to answer the question, "What do ordinary arguers think they are doing when they argue?"

To develop answers to that question a battery of instruments was developed, each designed to capture a kind of perception or expectation about interpersonal arguments. The instruments fall into three categories, which are held to be in order of sophistication about the arguing experience. The first group is self-oriented and describes arguers' primary goals for arguing, the views that frame the interaction. This category includes respondents' perception that people argue in order to obtain some *utilitarian* outcome, to assert their *dominance* over the other person, to exhibit some aspect of own *identity*, or to *play*. Notice that in this set of frames, the other person is regarded mainly as a foil needed to obtain outcomes, absorb an identity display, accept dominance, or provide playful interaction. The second category of frames reflects the connection between self and other and describes the degree to which an arguer adapts to the other person's goals. Here the other person is seen as an authentic agent, deservedly having his/her own goals and intentions. The particular measures are *blurting*, *cooperation*, and *civility*. Blurting is a transitional measure, indicating whether or not an arguer is able to pass from self-oriented objectives (utility, dominance, etc.) to those that involve the other person as more than a means for achieving personal goals. A non-blurter has moved beyond exclusive self-focus and so may see that arguments can be cooperative and civil. Cooperation and civility both require that the other arguer be treated genuinely, with his or her own goals registered and taken seriously. The final category of frames, abstract reflections on the arguing experience, has only one instrument called *professional contrast*. This offers respondents a choice of opposed descriptions (e.g., uncontrolled emotionality v. reason giving, dominance v. issue resolution, relationally damaging v. relationally developmental) and asks which best describes arguing. The contrasts were selected because ordinary arguers sometimes have views opposite those of the professional

argumentation community on those points (that is, in the example items scholars would insist on the second choice but many people choose the first). Advanced arguers are those whose reflective understandings of arguing best match those of argumentation scholars.

This theoretical understanding of argument frames indicates where blurting sits in this system. Blurters are self-focused and so they are not expected to participate in the more advanced understandings of arguing. Consequently, blurters should not see arguing as cooperative or civil, and should have low scores on the professional contrast instrument.

Study 1

Descriptions of Blurting and Non-Blurting

Our initial objective was to acquire a simple description of blurting. We asked respondents to give open-ended descriptions of a situation in which they blurted, and a situation in which they might have blurted but did not (that is, they were aware that they edited, either suppressing or revising whatever came first to mind). We will do a qualitative analysis of these materials along with some light descriptive coding to address this research question:

> RQ1: What are the characteristics of blurts and blurting episodes and how do they differ from situations in which blurting was tempting but avoided?

Respondents also rated both situations on a standard set of scales that measure several features of situations (Cody, Woelfel, & Jordan, 1983). These measures reflect the stakes involved in the situations, as well as apprehension levels and the arguers' relative status. On the assumption that blurters *can* edit, even if they decline to do so, we expect that they will be most motivated to edit when the stakes are highest and least motivated when the consequences of blurting are lowest. Therefore we predict

> H1: When comparing situations in which people did and did not blurt, the blurting situations will be rated as higher on right to remark, and lower on personal benefits, relational consequences, situational intimacy, other's dominance, and situational apprehension.

These scales have been applied in the editing research program, and several connections were found between the situational descriptors and endorsement (summarized in Hample, 2005, p. 182). The results were supportive of Hypothesis 1, on the assumption that blurting will be associated with more endorsements.

Blurting and Editing

The editing literature implied that blurters (compared to non-blurters) should endorse more messages and make less use of various editorial criteria. These two hypotheses have to do with the validity of our conceptualization and measurements. Should blurting not be related to editing in the ways we have indicated, serious questions would arise about this project.

> H2: Self-reports of blurting proclivity will be positively associated with endorsement of possible messages.
> H3: Self-reports of blurting proclivity will be negatively associated with use of several editorial codes: harm to other, harm to relationship, irrelevance, and truth.

Our reasoning is that blurters do not make much use of Meyer's (1997) action-consequence associations, and so will not be as likely to notice that messages might damage relationships or violate ordinary norms of discourse. Therefore, they will be willing to endorse messages that others would reject on these grounds. Earlier versions of the blurting instrument had factor structures that were hard to interpret and the present study aims to improve this measure. Using earlier measures of blurting, Hample, Warner, and Young (2009) failed to associate blurting with editorial activity in the ways specified in Hypotheses 2 and 3.

Blurting and Argument Frames

The next hypothesis derives from the empirical work on argument frames. Our reasoning begins with the idea that blurters do not make the transition from self-oriented frames to those that seriously involve other people. We make no particular prediction about how blurting will relate to the first-order frames (utility, dominance, identity display, and play). However, we expect that people high on the blurting instrument will see arguments as less cooperative and civil, and that they will be less likely to agree with argumentation professionals on the characteristics of arguing encounters. Therefore,

> H4: Self-reports of blurting proclivity will be negatively associated with the cooperative and civil frames for argument, as well as professional contrast scores.

Using a different version of the blurting measure that had three subscales, Hample et al. (2009) showed uniform support for this hypothesis for one subscale ("blurting to take care of business") but no support at all for another ("blurting what's on my mind"). The third subscale, "blurting without thinking," had negative correlations for all three of the predicted relationships, but the one for cooperation was not significant. Although they do not report the pertinent results, the data set from Hample, Warner, and Norton (2006) also gives uneven support for the hypothesis. Analysis of their blurting items yielded two subscales. With the subscale "blurting without thinking" their data produced negative correlations with civility ($r = -0.18$, $p < 0.05$) and professional contrast ($r = -0.23$, $p < 0.01$), but not with cooperation ($r = 0.10$, *ns*). Their other subscale, this time "blurting for honesty," yielded a positive correlation with cooperation ($r = .28$, $p < .001$), but non-significant associations with civility and professional contrast. The distinctions among these various blurting subscales have never been clear, but previous work gives some empirical support for Hypothesis 4.

Blurting and Individual Differences

We expect that people will rarely label spontaneous and unedited *nice* things as blurts. Mostly blurts will be associated with inadvertent harm to self or other. People who

are habitually sensitive to such issues should be less likely to say harmful things. In Meyer's (1997) terms, people who do not blurt are those who work more with action-consequence associations. If our reasoning holds, we should see blurters being more willing to say hurtful and aggressive things. Therefore,

> H5: Self reports of blurting proclivity will be positively associated with willingness to approach arguments, willingness to say verbally aggressive things, and willingness to engage in indirect interpersonal aggression. Blurting should be negatively associated with a tendency to avoid arguments, motivation to engage in prosocial behavior, and empathy.

These behavioral patterns are associated with several other individual differences, and so we hypothesize further:

> H6: Self reports of blurting proclivity will be positively associated with psychological reactance, sensation seeking, and masculinity, and negatively associated with femininity.

Argumentation research affords some evidence for Hypotheses 5 and 6. Gilbert (1995, p. 845) insisted that empathy is the key to achieving coalescence in interpersonal arguments, but we theorize that blurters do not engage other people's nature with this degree of involvement. People higher in argumentativeness tend to make more arguments in interaction, suggesting that they would endorse and blurt more often (reviewed in Hample, 2005, p. 180). Argumentativeness and verbal aggressiveness are both varieties of assertiveness (Rancer & Avtgis, 2006) and are positively associated ($r = .17$; Hamilton & Mineo, 2002). This suggests that things correlated with argumentativeness will also tend to be associated with verbal aggressiveness. Males tend to have higher scores on verbal aggressiveness (Infante & Wigley, 1986) and argumentativeness (Infante & Rancer, 1982), suggesting that if blurting is associated with sex it may have further connections to masculinity and femininity. The editing research (summarized in Hample, 2005, pp. 223–224) showed that endorsements on the editing task were positively correlated with argument-approach and verbal aggressiveness. Hample et al. (2009) offered some support for the hypothesized predictions regarding reactance, masculinity, femininity, argument-avoid, and both verbal aggressiveness subscales. Only sensation seeking and indirect interpersonal aggression have no precedent in the argumentation literatures on these topics. Sensation seeking should match the impulsiveness of blurting and indirect interpersonal aggression may be associated with blurters' relative disregard for social niceties.

Blurting and Supertraits

McCroskey, Heisel, and Richmond (2001) reported a number of correlations between fundamental personality measures and several of the variables used in this study. They reported that argumentativeness was positively correlated with psychoticism and extraversion, and verbal aggressiveness was also positively correlated with psychoticism. Compulsive communication, which may have some conceptual

connection to blurting, was positively associated with extraversion. The basic idea in this research is that the overarching personality traits are heritable (Beatty, Heisel, Hall, Levine, & La France, 2002). Communibiologists argue therefore that anything associated with those variables is also likely to have a genetic component and to be implemented in heritable human biology. Given that we are predicting associations between blurting and several of the Big Three's correlates, blurting may have the same sort of relationship to these supertraits. Therefore,

> H7: Self reports of blurting proclivity will be positively associated with extraversion and psychoticism.

Altogether the research question and hypotheses should put us in a position to describe self-identified episodes of blurting and to sketch a profile of blurters. Besides learning something about blurters' other communication traits, individual differences, and perceptions of argumentative episodes, we will also acquire an idea as to how people integrate situational perceptions into their planning (or not planning) of message behavior.

Method

Participants. Data were collected online. Communication majors were emailed links to several surveys, which they completed at convenient times over about two weeks. A total of 230 students participated, and 68% were female. The sample's average age was 20.8 years ($SD = 2.70$). None were freshmen; 20% were sophomores, 35% were juniors and 45% seniors. Euro-Americans constituted 52% of the sample, followed by African-Americans (12%) and Asian-Americans (8%). The remainder self-reported that they were a combination of the available choices (7%), or had some other ethnicity or national origin.

Measures

Blurting. As the literature review indicated, measurement of blurting has been problematic in the past. Here, we began with 16 items intended to measure blurting. An exploratory principal components analysis suggested a two-component solution, but we did not regard the second component as conceptually distinct from the first; it mainly consisted of reverse-worded items (e.g., "While arguing you should adapt your message to the needs of others," "I'm always careful to edit what I say during arguments"). We therefore selected the ten items that clearly loaded on the first component, and used the average of these as our blurting measure. Table 1 reports the surviving items along with their loadings on the single principal component. Respondents used a five-point Likert scale for each item (strongly disagree to strongly agree); unless otherwise noted, this was the response format for all other measures in Study 1. Cronbach's alpha was .81.

Blurting and non-blurting situations. Each respondent reported on a situation in which she/he had blurted and another in which she/he almost blurted but did not. The instructions for the blurting situation were: "Please think of an episode in which

Table 1 Blurting Items

Item	Component loading
When I interact with another person I just say what's on my mind	.503
During arguments, I don't have time to think about what I'm going to say	.488
After an argument, I often regret some of the things I said	.597
*In an argument, if I think it, I will say it	.710
*I argue without thinking before I speak.	.766
I always say what's on my mind	.601
During a heated argument, my mouth is engaged, but my mind often isn't	.672
*When I make a point in an argument, I'm usually not very concerned about how the other person is going to take it	.468
*I sometimes offend other people during arguments	.582
*Sometimes when I think of a really good point to make, I just can't stop myself from making it, even if I should	.566

*Items retained after Study 2 analyses.

you blurted—that is, said something without thinking, something that you think you shouldn't have said." For the other situation the instructions were: "Please think of an episode in which you did NOT blurt—that is, you thought of something to say but immediately suppressed it because you realized you shouldn't say that." In the blurting condition, respondents were asked to describe the blurt and explain why they identified it as such. In the non-blurting situation, they were asked to report what they almost said but didn't, and what they said or did instead.

In addition, respondents rated each of these situations on a battery of scales (Cody et al., 1983; see Hample & Dallinger, 2002). Cody et al. originally developed the items to study persuasive situations, so we reworded some items to say "remark" instead of "persuade." These instruments are personal benefits (Cronbach's alpha = .91 for the blurting situation and also .91 for the non-blurting situation), situational apprehension (.83 and .87), expected resistance from target (.78 and .75), respondent's right to remark (.83 and .85), situational intimacy (.82 and .86), other's dominance (.88 and .91), and relational consequences (.82 and .85).

Editing. The Hample and Dallinger (1987) methodology was used to assess respondents' editorial tendencies. The stimulus situation, requesting a friend to accompany the respondent to a movie that the friend was not likely to enjoy, was followed by 48 possible messages. For each message, participants could say they would be willing to use it ("endorsement;" any number of messages could be endorsed) or that they would not. For suppressed messages, respondents indicated the main reason why they would reject it: it would be ineffective, it was too negative to use, it would harm self, it would harm other, it would harm the relationship, it seemed irrelevant, it seemed false, or some unlisted reason. To reduce respondent fatigue, we only used one situation, meaning that this data set does not produce reliability estimates. In Hample and Dallinger (1998), contingency coefficients among repeated measures were generally .80 or higher for each of the response codes.

Hample et al. (2009) compared responses among four different situations and reported generally satisfactory Cronbach's alphas for the response codes: poor alphas were found for harm to relationship (.63) and false (.66), but all the other estimates were between .73 and .90.

Argument frames. The argument frames battery (Hample et al., 2006) requests respondents to indicate the degree to which they believe that interpersonal arguments have, or can have, certain characteristics (Hample, 2003). Blurting is one of the frames but was detailed above. The remaining frames are using arguments to display one's identity (Cronbach's alpha = .77), using arguments to display dominance over the other person (.81), using arguments for play (.78), and using arguments to obtain utilitarian outcomes (.74; four reverse-worded items were dropped to increase reliability). Frames measures also include seeing arguments as cooperative rather than competitive (.70 after dropping one item) and as being civil (.77). The last instrument is professional contrast (.79).

Argumentativeness. The argumentativeness instrument (Infante & Rancer, 1982) has two ten-item subscales, argument-approach and argument-avoid. Cronbach's alpha for argument-approach was .86, and was .84 for argument-avoid.

Verbal aggressiveness. The verbal aggressiveness instrument (Infante & Wigley, 1986) also has two ten-item subscales (Levine et al., 2004). Verbal aggressiveness (antisocial) had a Cronbach's alpha of .82, and verbal aggressiveness (prosocial) gave an alpha of .76.

Indirect interpersonal aggressiveness. This instrument measures the impulse for indirect, possibly deniable, ways to be aggressive toward another person (Beatty, Valencic, Rudd, & Dobos, 1999). This is a ten-item scale that produced Cronbach's alpha = .90.

Empathy. Two aspects of empathy were taken from Davis' battery (Davis, 1980, 1983; Stiff, Dillard, Somera, Kim, & Sleight, 1988). These were perspective taking (Cronbach's alpha = .77) and empathetic concern (.71).

Reactance. We used the Dowd, Milne, and Wise (1991) therapeutic reactance scale to assess psychological reactance. This instrument was reduced to 19 items (essentially, all the reverse-worded items were dropped) and produced a Cronbach's alpha of .81.

Sensation seeking. The Revised Non-sexual Experience Seeking Scale (Kalichman & Rompa, 1995) was used to measure sensation seeking. This eleven-item instrument produced a Cronbach's alpha of .82.

Masculinity and femininity. The Bem Sex Role Inventory (Bem, 1974) has twenty items to index masculinity and twenty for femininity. Applying seven-point Likert instruments to these items produced a Cronbach's alpha of .88 for masculinity and .83 for femininity.

Big three. Psychoticism, neuroticism, and extraversion were assessed with the short form of the Revised Eysenck Personality Questionnaire (Eysenck & Eysenck, 1975; Eysenck, Eysenck, & Barrett, 1985). This battery also includes a "lie" scale, which is calculated by noticing unrealistic answers. Cronbach's alphas for the instruments were .89 for extraversion, .89 for neuroticism, .64 for psychoticism, and .80 for lying.

Results

Table 2 reports descriptive results for the study's variables, with the exception of the codes and ratings for the open-ended descriptions of the blurt and non-blurt situations. These will be reported separately. Correlations among all the individual differences measures are available from the authors.

Research question 1. Our initial objective was to answer the question, "What are the characteristics of blurts and blurting episodes and how do they differ from situations in which blurting was tempting but avoided?" We read the open-ended descriptions of situations in which respondents had blurted and situations in which they had almost blurted, but stopped themselves. We went through the descriptions, took notes independently, conferred, re-read, filled out our notes, conferred again, and so forth until we had reached conceptual satiation (Ayres, Kavanaugh, & Knafl, 2003; Morse & Field, 1995). At that point, we generated coding instructions for some of the features of the situations and then coded the materials. Two of us each coded all the descriptions. Tables 3 and 4 display Cohen's kappas for the codes, as well as descriptive information.

We retained some rare codes in our final system to display how unusual certain characteristics were. For instance, only one respondent identified something as a blurt that involved a socially desirable remark:

> When talking to a friend that I do not want to live with, who wants to live with me, I said that I would consider living with her, even though I had committed to living with someone else. . . . I shouldn't have said I would live with her, but I am too much of a people pleaser to speak the truth and speak up for myself most of the time.

Every other example of a blurt was immediately negative, and even this exception was personally regrettable. More typical blurting outcomes were embarrassment, regret, and offense. For example, this blurt caused immediate mutual embarrassment:

> I have a joke that I usually play with someone when they want a favor from me. Joking around I would say "Call me master," and I usually say it with my close

> friends. Well when my one African-American friend asked me to do something, I said this comment.

Another example is reminiscent of nearly every televised situation comedy: "I was on the phone with my girlfriend and blurted out my ex-girlfriend's name. I tried to catch myself, but my girlfriend already knew I was calling her by my ex's name." Almost exclusively, only remarks with negative outcomes are understood to be blurts.

Table 2 Descriptive statistics, Study 1

Measure	*N*	Items	Mean	SD
Blurting	225	10	2.91	0.42
Editing				
Endorsement	229		12.54	7.44
Ineffectiveness	229		8.30	7.94
Too negative	229		5.50	6.67
Harm self	229		1.35	3.14
Harm others	229		3.79	5.76
Harm relationship	229		3.15	4.69
False	229		5.09	7.52
Irrelevant	229		5.08	5.86
Residual	229		2.15	4.56
Argument frames				
Utility	225	13	3.01	0.40
Identification	225	8	3.42	0.56
Play	225	4	2.56	0.83
Dominance	225	6	2.63	0.72
Cooperation	225	8	3.54	0.47
Civility	225	10	3.40	0.50
Professional contrast	225	7	3.52	0.62
Various measures				
Argument approach	228	10	3.22	0.61
Argument avoid	228	10	3.04	0.64
VA prosocial	228	10	3.40	0.51
VA antisocial	228	10	2.53	0.62
Indirect int aggress	220	10	2.55	0.73
Reactance	225	19	3.01	0.44
Empathy perspective	220	7	3.38	0.58
Empathy concern	220	7	3.71	0.50
Sensation seeking	219	11	3.33	0.67
Masculinity	228	20	4.82	0.76
Femininity	228	20	4.77	0.67
Big Three				
Psychoticism	228	12	2.18	0.41
Extraversion	228	12	3.84	0.57
Neuroticism	228	12	2.87	0.72
Lying	228	12	2.87	0.57

Note: The editorial codes are counts with a maximum of 48. Masculinity and femininity were measured on a 1–7 scale. All other variables were measured on a 1–5 scale. Higher means indicate more of the named characteristic.

Our respondents' free form answers also displayed spontaneity. Some were inadvertent slips ("While eating lunch at my grandparents' house one day, I accidentally discussed plans for my aunt's surprise party while she was in the room. I was asked what I was doing the following day and spilled the surprise."). Others occurred during unthinking anger: "If I wasn't so angry and she would have seen my point of view, then I wouldn't have blurted that she had no friends." The codes for 'didn't immediately appreciate the harm of what I was saying,' 'inadvertent disclosure,' 'spoke out of anger or frustration,' and 'a private thought just slipped out,' accounted for 87% of the blurts (Table 3). Blurts are spontaneous and unedited.

Most commonly the blurts had a bearing on some relationship issue (48%). Blurters ordinarily had a noticeable relationship with the other person, often blurting to family, friends, or romantic partners. A little more than half the time, the blurt occurred in the context of a private dyadic conversation. Almost as often, it took place within a larger group.

When a blurt was tempting but avoided, we see a different proportion (Table 4). Dyadic conversations accounted for almost two-thirds of the non-blurts, suggesting that perhaps these more obviously personal interactions motivated more focus on what was about to be said.

Particularly interesting are the data concerning what people did instead of blurting. A little more than half said nothing at all. Sometimes these episodes resembled Berger's (2004) reports about speechlessness in the face of emotional overload: "I wanted to yell and scream and tell her that I felt she was just trying to be annoying. But because this is my mom I had to respect her. I stood there quiet, and did not utter a word." More often, however, silence was a considered choice, as in this example: "I bit my tongue and listened to her [mother's] advice. Even though I didn't 100% agree with it, I knew she was saying it because she cared about me and was trying to make me think positively."

For the nearly half of respondents who were more active than this in the face of blurting temptation, 86% revised their impulsive utterance plan to make it more appropriate and polite. This is a typical revision: "A girl asked me if she looked too heavy in a dress she was wearing. [I first thought to say] that the dress was too tight . . . I told her she looked great in the dress."

Although the proportions are a bit different when compared to situations in which blurting took place, the non-blurts still tended to be in conversations with friends or close relational partners. Relational issues were not as prominent as they were for blurts, but they were still the leading sort of topic. Discussion of other people's appearance and habits were more common topics when blurts were avoided than when they happened.

In sum, the open-ended materials display evidence that blurts were spontaneous, they were not (or at least less) edited, and they resulted in outcomes that were felt as negative. When people intentionally avoided blurting, their primary course was inaction—silence or topic change. Not quite half the time, they actively revised, and their editing was uniformly aimed at moving away from unfavorable outcomes, as Meyer's (1997) theory predicted.

Table 3 Descriptions of Blurting Situations, Study 1

Code	Frequency	Percentage	Kappa
Why Call It a Blurt?			.73
Regret	37	17%	
Untrue	25	12%	
Embarrassing	12	6%	
Offensive	84	39%	
Neg. Consequences	43	20%	
Other	17	8%	
Blurt Situation Impulse			.87
Gave desirable response	1	0.5%	
Wanted to hurt other	19	9%	
Didn't realize the harm	27	12%	
Inadvertent disclosure	30	14%	
From frustration/anger	96	44%	
Private thought slipped	37	17%	
Other	7	3%	
Number of people present			.98
Two	120	55%	
More than two	97	45%	
Relationship type			.91
Stranger	12	5%	
Friend/acquaintance	82	38%	
Roommate	11	5%	
Co-worker	5	2%	
Family	52	24%	
Romantic partner	30	14%	
Other/ >One/Not Specify	26	12%	
Conversation topic			.79
Academic	14	7%	
Job/professional	11	5%	
Daily activities	16	7%	
Money/financial	3	1%	
Relational issues	103	48%	
Others' appearance/habits	31	14%	
Own appearance/habits	2	1%	
Social events	14	7%	
Use Material goods	4	2%	
Entertainment	9	4%	
Religion	1	0%	
Politics	3	1%	
Other	6	3%	

Hypothesis 1. The first hypothesis concerns the scales on which respondents rated the blurt and non-blurt situations that they described. Our reasoning was that the higher the stakes in the conversation, the more that people would be motivated to swallow their potential blurts. In particular, we predicted that the blurting situations would be rated higher on right to remark, and lower on personal benefits, relational consequences, situational intimacy, other's dominance, and situational apprehension. Table 5 reports the results of a series of within-subjects mean comparisons.

Results show that the blurting situations were in fact rated as higher on right to remark and as lower on personal benefits, situational apprehension ($p = .054$, two-

Table 4 Descriptions of Non-Blurting Situations, Study 1

Code	Frequency	Percentage	Kappa
What did you do?			.98
Said nothing	116	54%	
Edited, then spoke	100	46%	
If edited, how?			.94
Kinder/gentler remark	86	86%	
Changed topic	14	14%	
Number of people present			.98
Two	149	69%	
More Than Two	68	31%	
Relationship type		.97	
Stranger	16	7%	
Friend/acquaintance	91	42%	
Roommate	25	12%	
Co-worker	6	3%	
Family	35	16%	
Romantic partner	25	12%	
Other/ > One/Not Specify	19	9%	
Conversation topic			.87
Academic	14	7%	
Job/professional	9	4%	
Daily activities	22	10%	
Money/financial	5	2%	
Relational issues	78	36%	
Others' appearance/habits	54	25%	
Own appearance/habits	1	0%	
Social events	9	4%	
Use material goods	5	2%	
Entertainment	6	3%	
Religion	4	2%	
Politics	1	0%	
Other	8	4%	

tailed, as are all the other significance tests in this report), and relational consequences. Several of the effect sizes were noticeable. These results accord with our prediction. However, we did not find support for our predictions that the blurting situations would also be lower-rated for situational intimacy and other's dominance. Hypothesis 1 received partial support.

Hypotheses 2 and 3. The next two hypotheses associated blurting and editing. We predicted that blurters will endorse more messages because they don't edit much and that, because they do not consider secondary goals prior to utterance, they will make less use of the editorial standards that concern harm to other, harm to relationship, relevance, and truth. We tested these hypotheses by correlating the blurting self-report to the number of times people made use of each of the editorial choices. Hypothesis 2 is supported, because the correlation between blurting and endorsement was $r = .27$, $p < .001$. Hypothesis 3 received uneven support. Consistent with predictions, blurting was negatively associated with use of the harm to other

Table 5 Within-Subjects Comparisons of Blurting and Non-Blurting Situations, Study 1

	Blurting		Non-Blurting			
Measure	Mean	SD	Mean	SD	t	r^2
Personal benefits	2.48	0.94	2.69	0.99	−2.56*	.03
Sit. apprehension	2.92	0.91	3.07	0.99	−1.94†	.02
Resistance	2.47	0.83	2.55	0.85	−1.17	
Rights to remark	2.98	0.93	2.58	0.94	5.09***	.11
Intimacy	2.17	0.92	2.27	0.97	−1.38	
Other dominance	2.45	1.01	2.41	1.05	0.49	
Relatnl. Conseq.	2.96	1.07	3.54	1.08	−6.25***	.15

Note: Degrees of freedom for each test is 220. All variables were measured on a 1–5 scale. Significance tests are all two-tailed. Higher means indicate more of the named variable.
†$p = .054$ *$p < .05$ **$p < .01$ ***$p < .001$.

suppression criterion ($r = -.13$, $p = .054$, two-tailed) and harm to relationship ($r = -.15$, $p < .05$). However, blurting was unassociated with either relevance ($r = -.05$, *ns*) or truth ($r = .04$, *ns*). Hypothesis 2 was supported and Hypothesis 3 received partial support.

No predictions were made regarding the other editorial choices, and the relationships between them and blurting were uniformly non-significant. For effectiveness, $r = .07$, *ns*; for too negative to use, $r = -.04$, *ns*; for harm to self, $r = -.09$, *ns*; and for the residual category, $r = -.05$, *ns*.

Hypothesis 4. The fourth hypothesis connected blurting to several of the other arguing frames. Because blurters were theorized not to pass into the more sophisticated understandings and perceptions of interpersonal arguing, we predicted that blurting would be negatively associated with scores for cooperation, civility, and professional contrast. This hypothesis was clearly supported. For cooperation, the correlation with blurting was $r = -.20$, $p < .01$; for civility, $r = -.32$, $p < .001$; and for professional contrast, $r = -.26$, $p < .001$. We made no predictions about the relationships between blurting and the first order frames. In fact, blurting was positively associated with each of them: for utility, $r = .26$, $p < .001$; for identification, $r = .21$, $p < .001$; for dominance, $r = .39$, $p < .001$; and for play, $r = .22$, $p < .001$. In sum, Hypothesis 4 was supported, and we also discovered that blurting is closely associated with sensitivity to the self-oriented goals for arguing.

Hypotheses 5 and 6. These two hypotheses move study of blurting into the general domain of individual differences. We chose a number of trait measures that would fill out our description of blurters' profiles.

Hypothesis 5 predicted that blurting would be positively associated with various sorts of assertiveness and aggression: argument-approach, verbal aggressiveness (antisocial), and indirect interpersonal aggression. Contrarily, we also predicted blurting would be negatively correlated with argument-avoid, verbal aggressiveness

(prosocial), empathy (perspective-taking), and empathy (concern). Blurting was in fact positively correlated with the antisocial subscale of verbal aggressiveness ($r = .45$, $p < .001$) and with indirect interpersonal aggression ($r = .29$, $p < .001$), but not with argument-approach ($r = .10$, *ns*). The predictions of negative correlations were also only partly sustained: for argument-avoid, $r = .06$, *ns*; for the prosocial subscales of verbal aggressiveness, $r = -.32$, $p < .001$; for the perspective-taking empathy measure, $r = -.35$, $p < .001$; and for the empathetic concern subscale, $r = -.11$, $p = .10$, two-tailed. Hypothesis 5 was partially supported.

Hypothesis 6 predicted that blurting would be positively associated with psychological reactance, sensation seeking, and masculinity, and negatively associated with femininity. For reactance, $r = .43$, $p < .001$; for sensation seeking, $r = .21$, $p < .01$; for masculinity, $r = .08$, *ns*; and for femininity, $r = -.09$, *ns*. Thus Hypothesis 6 was supported for psychological reactance and sensation seeking, but not for gender.

Hypothesis 7. The final hypothesis was intended to relate blurting to two supertraits, extraversion and psychoticism. We predicted positive correlations in both instances. The result for psychoticism was in accord with the hypothesis ($r = .15$, $p < .05$) as was that for extraversion ($r = .12$, $p = .07$, two-tailed). Neither result has a particularly large effect size. The unhypothesized relationships between blurting and the other subscales of the Big Three generated more substantial associations: for neuroticism, $r = .32$, $p < .001$; and for the lying subscale, $r = -.31$, $p < .001$. Although Hypothesis 7 was generally supported, the more interesting results were that blurters were higher in anxiety and notably unlikely to give socially desirable responses on the survey instrument.

Discussion

Study 1 was generally successful in providing a self-report measure of blurting, establishing its reliability, and demonstrating its validity. Because we reported such a large number of results, let us provide a simple summary of our findings. Blurters endorsed more messages overall and rejected fewer because of harm to other or relationship; they saw interpersonal arguments in a less sophisticated way, and as less cooperative or civil, but more pointedly emphasized the utility, identity display, dominance, and play goals for arguing; blurters were higher in verbal aggressiveness, indirect interpersonal aggression, psychological reactance, sensation seeking, psychoticism, extraversion, and neuroticism; and they were lower in empathy and lying. People were most likely to blurt when they believed they had high rights to speak in a situation, and were less likely when personal benefits and relational consequences were at issue, or when the situation made them apprehensive.

Study 2

The purpose of Study 2 is to undertake further psychometric analysis of the blurting scale and to explore its validity in more detail. We will test the scale against several individual differences measures.

Three of these, verbal aggressiveness, non-sexual sensation seeking, and psychological reactance, were included in Study 1. Verbal aggressiveness, particularly the antisocial subscale, was a strong marker of blurting ($r = .45$). This result captured the idea that blurting has negative social repercussions, and indicated that blurters have enough self-awareness to notice this. Reactance was also well associated with blurting, at $r = .42$. Sensation seeking had a lesser association ($r = .21$), but is an indication of impulsiveness. We expect to replicate these three results.

> H8: Blurting will be positively associated with verbal aggressiveness (antisocial), sensation seeking, and reactance.

In addition, we included three other individual differences measures, intended to give more precise information about spontaneity, impulsivity, and social sensitivity. Swann and Rentfrow (2001) developed the Brief Loquaciousness and Interpersonal Responsiveness Test (BLIRT). This instrument assesses the spontaneity of speech, with no indication that spontaneous speech has negative social effects (e.g., "I speak my mind as soon as a thought enters my head"). They found it to be positively associated with self-esteem, impulsivity, and quickness to speak. Vohs, Baumeister, and Ciarocco (2005) depleted respondents' regulatory ability by instructing them not to think about a white bear, and found that this manipulation increased people's BLIRT scores. This supported the validity of the scale by showing that it reflects simple spontaneity. BLIRT and blurting are both spontaneous, but only blurting includes the idea of negative repercussions. The two scales should be clearly related, but distinguishable. A second new instrument is the Barratt Impulsiveness Scale (Stanford et al., 2009). Both blurting and BLIRT, sharing a core spontaneous impulse, should be positively associated with impulsivity. Finally, we included measures concerning people's sensitivity to own and other's positive and negative face (Cai & Wilson, 2000). Blurters should show less concern for face issues pertaining to the other, compared to non-blurters.

> H9: Blurting will be positively associated with BLIRT and impulsivity, and negatively associated with sensitivity to other's face.

Assuming that blurting and BLIRT are clearly associated, a remaining question is whether the two phenomena can be distinguished using the measures in Study 2. In principle, blurting should show stronger connections to antisocial outcomes, because the BLIRT scale makes no mention of these. It however remains possible that simple spontaneity produces these negative outcomes anyway. Therefore, we ask:

> RQ2: Are blurting and BLIRTing distinguishable?

Method

Respondents were 570 students enrolled in undergraduate communication classes. Their average age was 19.7 years ($SD = 1.80$). More of the respondents were women (63.9%) than men (35.4%). Freshmen accounted for 28.1% of the sample, sophomores for 29.6%, juniors for 17.9%, and seniors for 23.5%. About 53% of respondents self-identified as Euro-American, followed by 10.4% African-American, and 9.8% Asian-American. The remaining were other ethnicities, citizens of other countries, or some combination of the available choices.

Respondents filled out instruments in one online session. They responded to the sixteen-item blurting measure used in Study 1, as well as the other instruments mentioned above: verbal aggressiveness, BLIRT, face, the Barratt Impulsiveness Scale, and the Revised Non-sexual Experience Seeking Scale. In this study, we used the Hong Reactance Scale (Hong & Faedda, 1996; Hong & Page, 1989) to assess psychological reactance. Students responded to every item using ten choices, rather than the five typically available in Study 1.

Measurement models

Blurting. All sixteen blurting items were used. They were subjected to a principal components analysis. Although five components had eigenvalues greater than one, the most conceptual clarity was again present in the two-component solution, which accounted for 41% of variance. The first component included the ten items used in the Study 1 analyses, and the second component was again comprised mostly of items phrased to indicate that respondents do not blurt (e.g., "I fully think through my argument before I speak"). Cronbach's alpha for the ten items that loaded on the first component (the same ten as in Study 1) was .83.

The present sample size is sufficient to justify confirmatory factor analysis, conducted using maximum likelihood estimation in LISREL 8.8, as were those to follow. The ten blurting items did not have a good fit: $\chi 2\ (35, N = 570) = 676.57$, $p < .001$, $RMSEA = .19$ (90% $CI = .18 - .21$), $CFI = .81$, $SRMR = .11$, $AIC = 826.16$. To obtain a more secure measurement model, we selected the five items that had the highest loadings (all R^2s exceeded .40) on the latent blurting factor. The CFA for these items produced $\chi 2\ (5, N = 570) = 69.25$, $p < .001$, $RMSEA = .15$ (90% $CI = .12 - .18$), $CFI = .94$, $SRMR = .05$, $AIC = 89.03$. The *RMSEA* is larger than desired, but the other indices are satisfactory, and the *AIC* is clearly better (Burnham & Anderson, 2004, p. 271). Cronbach's alpha for the five-item scale was .78. The correlation between the ten- and five-item blurting measures was .94 in this data set. These five items are marked with asterisks in Table 1. The five-indicator solution is preferred and will be used in analyses of Study 2 data.

Blirt. The BLIRT scale was subjected to a principal components analysis. This resulted in two components, one with four items worded to indicate spontaneity (e.g., "I never have a problem saying what I think") and the other with four

expressing the opposite (e.g., "Sometimes I just don't know what to say to people"). Reverse scoring of the items loading on the second component produced a Cronbach's alpha of .77. The CFA produced poor results: $\chi 2$ (20, $N = 569$) = 840.23, $p < .001$, $RMSEA = .29$ (90% $CI = .28 - .31$), $CFI = .68$, $SRMR = .21$, $AIC = 1034.26$. Inspection of the loadings of each indicator on the BLIRT latent factor indicated that all of the reverse-worded items had R^2s less than .06, and all the spontaneity-worded items had R^2s greater than .50. Therefore, we reduced the scale to those four items, and obtained better fit: $\chi 2$ (2, $N = 569$) = 16.89, $p < .001$, $RMSEA = .12$ (90% $CI = .07 - .17$), $CFI = .99$, $SRMR = .02$, $AIC = 33.61$. The *RMSEA* is again higher than desired, but the other fit indices are good, and the *AIC* shows that this is a much better model than the eight-item CFA. Cronbach's alpha for the four-item BLIRT scale was .88, and the correlation between the eight- and four-item scales was $r = .77$. The four-item scale is used in further analyses.

Sensitivity to face. The face variables were analyzed in a single CFA. The initial analysis produced an acceptable result: $\chi 2$ (84, $N = 570$) = 362.52, $p < .001$, $RMSEA = .08$ (90% $CI = .07 - .09$), $CFI = .97$, $SRMR = .06$, $AIC = 444.42$. However, we noticed that the fifth indicator for other's positive face loaded poorly on its latent ($R^2 = .01$), and so we deleted it. The revised model produced $\chi 2$ (71, $N = 570$) = 301.91, $p < .001$, $RMSEA = .08$ (90% $CI = .07 - .09$), $CFI = .98$, $SRMR = .05$, $AIC = 376.94$. The *AIC* statistic indicated that the second model is clearly better, and so other's positive face will be calculated without this indicator.

Non-sexual sensation seeking. The eleven items for sensation seeking were submitted to confirmatory factor analysis. Results were $\chi 2$ (44, $N = 569$) = 666.21, $p < .001$, $RMSEA = .16$ (90% $CI = .15 - .17$), $CFI = .88$, $SRMR = .09$, $AIC = 743.58$. Only five of the indicators had R^2s greater than .50 with the latent variable. Restricting our analysis to those five items, results were $\chi 2$ (5, $N = 569$) = 90.13, $p < .001$, $RMSEA = .17$ (90% $CI = .14 - .20$), $CFI = .96$, $SRMR = .05$, $AIC = 109.45$. Although the *RMSEA* fit index worsened marginally, the other indices were better, and the *AIC* clearly pointed to the second model as better. The five-item sensation-seeking scale is used in further analyses.

Barratt impulsiveness scale. The thirty impulsivity items were subjected to a principal components analysis. Although seven components were associated with eigenvalues greater than 1, the most conceptually useful solution had two components (total variance = 39%). The first component contained items expressing impulsivity (e.g., "I do things without thinking"), and the second had items indicating the opposite (e.g., "I am a careful thinker"). With the second component's items reverse scored, Cronbach's alpha for the thirty-item scale was .82. The CFA for all thirty items generated $\chi 2$ (405, $N = 566$) = 4,810.26, $p < .001$, $RMSEA = .19$ (90% $CI = .18 - .19$), $CFI = .75$, $SRMR = .15$, $AIC = 8,465.36$. Only five of the thirty items had R^2s greater than .40 (items 2, 5, 14, 17, and 20, in the standard ordering). Item 20

had a negative loading with the latent variable even after being reverse scored, and so it was omitted to ensure statistical and conceptual coherence. The four-item model produced $\chi 2$ (2, $N = 566$) = 5.37, $p = .07$, *RMSEA* = .05 (90% *CI* = .00 − .11), *CFI* = 1.00, *SRMR* = .02, *AIC* = 21.28. The four-item measure is clearly better and will be used here. Cronbach's alpha for the four-item scale was .80. The thirty- and four-item versions correlated at $r = .83$.

Verbal aggressiveness. Verbal aggressiveness is composed of two ten-item scales, measuring antisocial and prosocial motivations. The Cronbach's alpha for the antisocial subscale was .89, and was .85 for the prosocial subscale. All twenty items were combined in a single CFA with two latent factors, with these results: $\chi 2$ (169, $N = 569$) = 816.54, $p < .001$, *RMSEA* = .09 (90% *CI* = .08 − .09), *CFI* = .93, *SRMR* = .07, *AIC* = 940.92. We selected the five best indicators for each subscale (in the standard ordering, we used items 1, 3, 5, 14, and 15 for the prosocial subscale, all having $R^2 > .40$; and items 6, 7, 9, 16, and 19 for the antisocial subscale, all having $R^2 > .50$). This reduced-indicator analysis gave better results: $\chi 2$ (34, $N = 569$) = 155.91, $p < .001$, *RMSEA* = .08 (90% *CI* = .07 − .09), *CFI* = .96, *SRMR* = .05, *AIC* = 194.61. The five-item scales are used in further analyses. Cronbach's alphas for the five-item subscales were .81 (prosocial) and .86 (antisocial). The full and reduced-indicator versions correlated at $r = .92$ (prosocial) and $r = .95$ (antisocial).

Psychological reactance. The Hong reactance scale has fourteen items (Hong & Page, 1989; also see Hong & Faedda, 1996). A principal components analysis yielded only two components with eigenvalues greater than 1. All items loaded positively and well on the first factor (the smallest loading was .49). Several of the second component's items had negative loadings on the second component, all concentrating on the idea of rejecting other people's advice (items 7, 13, and 14). All three of these items, however, had loadings larger in absolute value on the first component. These results were consistent with those of Shen and Dillard (2005), who indicated that a unidimensional solution is appropriate. Cronbach's alpha for the unidimensional 14-item scale was .89. We proceeded to a CFA with all 14 items used as indicators of a single latent factor. Results were poor: $\chi 2$ (77, $N = 566$) = 1,738.80, $p < .001$, *RMSEA* = .23 (90% *CI* = .22 − .24), *CFI* = .80, *SRMR* = .14, *AIC* = 2,453.78. Fit was much better when the five best items (loadings of $R^2 = .47$ or better) were used: $\chi 2$ (5, $N = 566$) = 15.51, $p < .01$, *RMSEA* = .06 (90% *CI* = .03 − .10), *CFI* = .99, *SRMR* = .02, *AIC* = 35.62. Cronbach's alpha for the five-item scale was .83. The fourteen- and five-indicator scales correlated at $r = .90$. The five-indicator version is used in further analyses.

Full Model. Finally, we tested a measurement model that combined all the variables just mentioned, using the reduced-indicator measurements. Results were: $\chi 2$ (979, $N = 570$) = 2,986.92, $p < .001$, *RMSEA* = .06 (90% *CI* = .06 − .07), *CFI* = .95, *SRMR* = .06. These results were acceptable.

Table 6 Descriptive Statistics, Study 2

Measure	*N*	Items	*Mean*	*SD*
Blurting	570	5	5.31	1.57
BLIRT	569	4	5.23	1.88
Sensation seeking	569	5	5.76	2.16
Other Pos Face	570	4	6.22	1.55
Self pos face	570	3	6.90	1.88
Other neg face	570	4	5.73	1.49
Self neg face	570	3	6.92	1.80
Impulsivity	566	4	4.90	1.18
VA prosocial	569	5	6.17	1.51
VA antisocial	569	5	4.54	1.74
Reactance	566	5	5.11	1.75

Note: All variables were measured on a 1–10 scale. Higher means indicate more of the named characteristic.

Results

Descriptive results are in Table 6, and correlations among the variables (calculated by averaging their items) are in the lower diagonal of Table 7. The upper diagonal of Table 7 contains the correlations among the latent variables, which are essentially corrected for attenuation due to measurement unreliability.

Hypothesis 8. The lower diagonal of Table 7 provides correlations that bear on Hypothesis 8. As predicted, blurting was positively associated with verbal aggressiveness (antisocial), reactance, and sensation seeking. These correlations were similar in magnitude to those obtained in Study 1. Hypothesis 8 was supported.

Hypothesis 9. Table 7 also shows that blurting and BLIRT are closely associated ($r = .57$), as predicted. Blurting had non-significant relationships with the other's face measures, contrary to the expectation that these correlations would be negative. Hypothesis 9 was supported in regard to BLIRT, not with respect to face.

Research question 2. The remaining issue is Research Question 2, which inquired whether blurting and BLIRT can be distinguished here. Inspection of the lower diagonal in Table 7 shows many parallels between the blurting and BLIRT measures. They are substantially correlated. Both have positive associations with sensation seeking, effort to protect own negative face, impulsivity, antisocial verbal aggressiveness, and reactance. Table 7's lower diagonal shows some differences as well. Self negative facework was more substantially associated with blurting than BLIRT, as were antisocial verbal aggressiveness and the prosocial motivations that are the reverse of verbal aggressiveness.

Table 7 Correlations Among Variables, Study 2

	Blurt	BLIRT	Sens Seek	Oth PosF	Self PosF	Oth NegF	Self NegF	Impuls	VA Anti	VA Pro	React
Blurting	–	.65	.27	−.01	−.02	.06	.23	.64	.67	−.23	.47
BLIRT	.57***	–	.27	.03	−.08	.07	.13	.51	.42	.02	.49
Sensat Seekg	.25***	.28***	–	.05	.06	.12	.16	.35	.22	.09	.29
Other Pos F	−.00	.03	.04	–	.63	.70	.31	−.01	.02	.61	.08
Self Pos Face	−.01	−.06	.05	.57***	–	.56	.52	−.07	−.08	.49	.00
Other Neg F	.06	.07	.12**	.60***	.51***	–	.34	.13	.14	.57	.13
Self Neg Face	.19***	.10*	.13**	.27***	.45***	.30***	–	−.05	.11	.31	.13
Impulsivity	.44***	.39***	.28***	−.10	−.06	.10*	−.06	–	.50	−.14	.56
VA AntiSoc	.55***	.38***	.23***	.04	−.02	.13**	.12**	.39***	–	−.21	.52
VA ProSoc	−.17***	.02	.08	.52***	.40***	.49***	.24***	−.10*	−.14***	–	−.05
Reactance	.37***	.41***	.27***	.08	.02	.11**	.12**	.41***	.43***	.02	–

Note: Correlations below the diagonal are between variables calculated by summing their contributing indicators. Correlations above the diagonal are between latent factors in the overall measurement model.

*$p < .05$; **$p < .01$; ***$p < .001$

Table 8 Unstandardized Gamma Coefficients, Study 2

	Blurting	BLIRT
Verbal aggressiveness (prosocial)	−.16	.33
Verbal aggressiveness (antisocial)	.33	.21
Impulsivity	.36	.44
Sensation seeking	(.00)	(.03)
Other's positive face	(.02)	(.02)
Self-positive face	(−.01)	−.15
Other's negative face	(−.06)	(−.11)
Self-negative face	.11	.10
Reactance	(−.02)	.30

Note: Coefficients displayed in parentheses were not significant.

To clarify the similarities and differences between blurting and BLIRT, we estimated a structural equation model in which blurting and BLIRT were endogenous (and their errors allowed to covary), and the other latent variables were exogenous (and allowed to covary). These were the fit results: $\chi 2\,(979, N = 570) = 2{,}986.92$, $p < .001$, $RMSEA = .06$ (90% $CI = .06 - .07$), $CFI = .95$, $SRMR = .06$. Blurting was more successfully predicted by this system of latent variables ($R^2 = .64$) than BLIRT ($R^2 = .38$). The error terms for blurting and BLIRT correlated at .23.

Table 8 shows the relationships between the exogenous and endogenous variables. Many of the results were similar, as we would expect given the common spontaneous nature of both processes. Both were quite impulsive, for instance, and involved some protection of own negative face. Several contrasts appeared as well. Simple spontaneity, indexed by BLIRT, was much more reactant and involved noticeable disregard for own positive face. Spontaneity allied with negative social effects, measured with the blurting scale, was much less prosocial and more antisocial. These results suggest that the two types of spontaneity are mainly distinguishable by the negative impulses involved in blurting, and the stronger reactant impulse that produces pure spontaneity.

Discussion

Results of Study 2 were consistent with those of Study 1. Blurting's positive associations with antisocial verbal aggressiveness, sensation seeking, and reactance were replicated. Blurting and a similar construct, BLIRT, were closely correlated. Distinctions between blurting and BLIRT were subtle but evident. The conceptual difference is that blurting involved negative social effects and simple spontaneity may not. Blurting was more antisocial than BLIRT, but less influenced by psychological reactance. Simple spontaneity involved more disregard for own positive face than blurting did. In addition, confirmatory factor analysis produced evidence that the blurting scale has good psychometric qualities.

General Discussion

Message Production

This paper is theoretically situated in the standard GPA theory of message production. The theory begins at the point of contact with the situation, and says that goals are then activated, plans are formed, and messages are finally produced. Our variables give insight into contact with the situation, most directly with the descriptions and measures of blurting and non-blurting episodes, but also with the argument frames instruments that assess expectations and understandings of the situation. The many traits we assessed can also be partly understood in terms of orientation to the situation. These traits and perceptions give rise to the primary goals for interaction, and activate the relevant secondary goals. Those secondary goals, if registered, stimulate the editorial process that we have shown blurters skip. They lack the empathy, orientation to face issues, and commitment to civility that non-blurters have.

Meyer (1997) theorized that people go through two stages in producing messages. The first involves situation-action associations, and this step is required for a message to appear. The second makes use of action-consequence associations, and blurters may skip it. By identifying blurters—by their self-reports, by their reactions to situations, and by their traits—we have begun the process of predicting who will omit the second phase and produce regrettable messages.

To illustrate the theoretical virtues of having a discrete idea of blurting, consider a common design feature of message planning studies. Often experimenters manipulate the speaker's cognitive load in some way. People may be given less versus more time to plan, or harder versus simpler tasks. Planning is more constrained (less detailed, less effective) when time is limited, when less of the necessary information is supplied, or when the required message is more challenging. These studies have shown that planning results in beneficial effects on the messages, both their content and their physical delivery. However, if the researchers had been working at least in part with the idea of blurting, they might just as easily have concluded that for the conditions in which blurting was more feasible, deleterious effects occurred. The standard effects might also differ when blurters and non-blurters are compared. Blurters might be less affected by high cognitive load because they don't plan very elaborately in the first place. Or it might be that when instructions force people to plan anyway, it is primarily the blurters' performance that shows the effects of experimenter-impelled planning. These may be productive lines of thought to explore experimentally, and might generate more precise understandings of planning.

Blurting

Analyses of respondents' open-ended descriptions of blurting and non-blurting situations were consistent with our original conception that blurting is spontaneous, unedited, and interactionally negative. When people stopped themselves from blurting, the most common result was simple silence. The potential blurts that were revised prior to utterance were made into messages that matched common secondary goals.

Our self-report measure of blurting is an improvement on the one used in prior argument frames research. It is more interpretable, is unidimensional, and has reasonable reliability. It captures more of the idea of blurting than the Swann and Rentfrow (2001) BLIRT measure, which is focused on the spontaneity of speech and ignores its carelessly negative outcomes. Validity evidence for the new instrument comes most directly from the editing data: blurters endorse more messages than non-blurters, and also make less use of harm to other and harm to relationship considerations. Other associations with individual differences—impulsivity, reactance, verbal aggressiveness, and sensation seeking, for instance—fill out the blurters' typical profile.

Why Do People Blurt?

An important question that we cannot presently answer has to do with the causes of blurting. Is it due to lack of motivation, lack of ability, or both?

Some of our results point to lack of motivation being a/the cause of blurting. Blurting and non-blurting situations were distinguishable in several respects. When the respondent felt she/he had more right to say whatever she/he wanted, blurting was more likely; conversely, when personal benefits to the interaction were potentially high, when the situation caused higher apprehension, and when relational consequences were salient, then people were less likely to blurt. The simplest explanation for this pattern is that people were more motivated to be careful in their remarks in high-stakes circumstances, and therefore suppressed their blurting.

We do not have any unmistakable indicants of ability in this study, but argumentativeness and verbal aggressiveness have sometimes been interpreted in that way (Rancer & Avtgis, 2006). In regard to verbal aggressiveness, we found that blurters were more antisocial. That finding might suggest that blurters simply do not have the ability to generate better messages. The modest association between blurting and psychoticism in Study 1 ($r = .15$) implies that blurters are emotionally flat to some degree, and do not naturally take others into account. Other evidence concerns people's ability to exercise inhibitory control over their messages. Researchers found that general ability to inhibit could be impaired by high cognitive load, so that people made inappropriate comments to an experimenter when they were cognitively occupied by a memorization task (von Hippel & Gonsalkorale, 2005). So general and immediate inability to edit both have relevance to blurting.

For the most part, however, we believe that our results are explicable by recourse either to ability or motivation deficits, or to both. Blurting could be due to disinclination to be appropriate or to an inability to foresee consequences. Blurters' failure to rate arguments as potentially cooperative and civil, for instance, might be caused by their imperceptiveness, but it might also be a consequence of them simply not caring about those possible outcomes for an argument.

In short, we find some evidence pointing toward motivational problems, some indicating an ability deficit, and quite a bit that is ambiguous in this context. Since blurting obviously generates unhappy interpersonal outcomes, it should be a target

for instructional or counseling intervention. Before those interventions can be intelligently structured, however, we should have a better idea of what the causal balance is, between motivational and ability problems.

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The Evolution of Networks and the Resilience of Interorganizational Relationships after Disaster

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This study uses social capital and evolutionary theory to examine organizational resilience in terms of interorganizational networks of disaster-struck organizations following Hurricane Katrina. Approaching post-disaster organizational resilience using social network analysis highlights the way pre-disaster relationships and networking patterns play a vital role in post-disaster rebuilding. Data support the idea of structural inertia, suggesting that disaster is an event that further strengthens pre-existing networks and is not a time when organizations might benefit from forging new networks in seeking support and fueling survival. Implications suggest that the social capital accrued through long-standing partnerships and efficient pre-disaster networking through building communities of practice significantly impact post-disaster resilience.

Keywords: Evolutionary Theory; Organizational Resilience; Social Capital; Disaster; Social Networks; Hurricane Katrina; Networked Forms of Organizing

Catastrophic circumstances have laid the groundwork for extensive scholarship on individuals' (e.g., elderly, underprivileged) survival, on the efficacy of first responder networks, and the role of government for building resiliency (Kaniasty & Norris, 1993; Kreps, 1984; Murphy, 2007). However, organizational-level network activity of a community's local businesses and organizations and how their activities are impacted by and impact the broader community has had much less attention (recent exceptions include Doerfel, Lai, & Chewning, 2010; Runyan, 2006; Webb, Tierney, & Dahlhamer, 2002). We assert that organization and business activities offer an important dimension that has been overlooked, while policy-makers and researchers,

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although justifiably, focus instead on local governments, first responders, and individual citizens. Yet, organizations are the employers of the community, providers of goods and services, and their collaborations are a form of informal infrastructure that are an aspect of community resilience (Fulk, Flanagin, Kalman, Monge, & Ryan, 1996).

This paper adds to organizational literature on resilience and focuses on the dynamics of interorganizational relationships (IORs) that support recovering organizations. We consider the networked relationships to which disaster-struck organizations (DSOs) turned as the communicative structures that play into organizational resilience and thus survival. We depict change in networks over recovery phases to extend the discussion of IORs and organizational evolution with the viewpoint of how relationships with supporting organizations (SOs) shaped a broader community network within which the DSOs survived. We adopt a multi-theoretical model to understand the varying levels of resilience of organizations in terms of mechanisms that shape networks. From literature on *evolutionary theory*, we view the disaster event in terms of punctuated equilibrium and analyze the networks over sequential phases to assess structural inertia and resilience. Because of the role different resource-holding capacities play in forming networks, we also consider levels of resources to examine varying levels of resilience. Finally, given the findings of Doerfel et al. (2010) that there are advantages of different organizations as network partners (e.g., professional associations) in disaster response, we use social capital to investigate stability and change of IORs. Taken together, then, we consider mechanisms of resilience by engaging a multi-theoretical framework using an evolutionary theory and social capital.

This paper is part of a larger project examining how IORs impact organizational recovery, and how businesses reconnect and build new partnerships in order to rebuild after disaster. This paper thus builds on the findings from previous research from the same data-set. The data used in the larger study capture phases of recovery, which allows for a focus on how organizations and their IORs evolve following disaster. Other papers report on a grounded theory model depicting stages of organizational recovery (Doerfel et al., 2010) and organizational resilience and technology use in practice (Chewning, Lai, & Doerfel, 2013). These studies used qualitative analyses, not social networks, and did not control for varying levels of resilience and resources.

This paper builds on the recovery stages framework that reported a grounded theory analysis of this data-set's in-depth interviews (Doerfel et al., 2010). We present the quantitative network data and report on aspects of specific types of networking that helped DSOs recover network patterns that distinguish levels of resilience post-disaster, and network structures across organizations with different types of resource-holding capacity. We review the literature on evolutionary theory as it pertains to processes among organizations and resource scarcity in terms of organizational resource-holding capacity, and social capital to assess resilience in terms of interorganizational networks. We present a collection of cases that together contribute to IOR networks at four recovery phases as New Orleans, LA (NOLA),

organizations rebuilt in the aftermath of Hurricane Katrina. The changes observed across IOR patterns suggest organizing mechanisms for survival.

Multi-Theoretical Framework and Resilience

Studying disaster provides the opportunity to glimpse at the full lifecycle of social ordering, from the end of one type of order through the beginning and maintenance stages of another (Kreps, 1984). Such contexts bring questions of survival to bear and highlight the tensions between micro- and macro-organizing processes. For example, one may consider particular strategies an organization adopts as being fundamental to survival and/or the particular ways environmental factors may shape or impede rebuilding. Thus, examining these tensions in terms of resilience can be best accomplished by drawing on theories of organizational and environmental action.

Resilience is a line of inquiry that studies organizational traits and processes to determine factors related to organizational survival. Resilience has been defined in terms of an organization's redundancy, capacity for resourcefulness, effective communication, and capacity for self-organization in the face of extreme demands (Kendra & Wachtendorf, 2003). Mark, Al-Ani, and Semaan (2009) looked at disaster recovery in wartime Iraq and identified several properties of resilience, including *reconfiguring social networks*, *self-organization*, *redundancy*, *proactive practices*, and *repairing trust in information*. Turning toward more process-oriented resilience, part of Powley's (2009) discoveries included resilient organizations' ability to mobilize social capital and networks. Affected organizations might look outside the realm of expected organized relationships to other types of emergent relationships. Because of this complexity, it is valuable to study such events not only in terms of "commonsense categories" such as firms or voluntary agencies, but also in terms of "populations of social units that engage in similar domains and/or initiate, maintain, and suspend similar forms of association" (Kreps, 1984, p. 316). Kreps' suggestion evokes organizational theories about survival and evolution.

Network Tensions of Stability versus Change

Darwin's (1936) evolutionary theory has been adapted to understand the communicative processes, organizational traits, and the impact of environmental events that relate to organizational survival over time (Hannan & Freeman, 1977; Monge, Heiss, & Margolin, 2008; Poole & Van de Ven, 2004). Evolutionary theory goes beyond a particular organization's resilience traits, with communication-focused theorizing broadening the scope about the role of IORs in the survival of organizations and extended communities of organizations (Monge et al., 2008). Organizations repeat cycles of variation, selection, and retention (VSR) through which they coordinate, compete, and survive. Hannan and Freeman (1977) laid the groundwork for a focus on selection through competition, but scholars concerned with how organizations negotiate through VSR cycles also consider tensions between environmental influences and local control across populations. One direction that inquiries have

gone is in identifying organizational populations that emerge as ideally suited for survival (Astley, 1985). Analyses consider structural inertia (Aldrich & Ruef, 2006; Hannan & Freeman, 1984; Shumate, Fulk, & Monge, 2005), strategic management (Keck & Tushman, 1993; Romanelli & Tushman, 1986), and organizational traits (McKelvey, 1982; McKelvey & Aldrich, 1983) as possible mechanisms of survival. More recently, communication-centered views hone in on link fitness (the ability of the link to sustain itself) and network carrying capacity (the most links a network can sustain) as organizing mechanisms of survival (Monge et al., 2008). Across these studies, the evolutionary perspective is about the dynamic nature of communication networks and the patterns of change through phases of organizations' existence (Monge et al., 2008; Poole & Van de Ven, 2004).

Some empirical studies support structural inertia or the idea that established networks are difficult to change (Hannan & Freeman, 1984). Network dynamics can be driven by past alliances, geographical proximity, and common shared relationships (Doerfel & Taylor, 2004; Flanagin, Monge, & Fulk, 2001; Shumate et al., 2005). So, although networks may be dynamic, fit links may stand the test of time and become a stabilizing network force. Regardless of the formation and maintenance of an organization's relationships, networks can be seen as the process of the VSR mechanisms being carried out (Monge et al., 2008). That is, an organization initiates communication to explore opportunities for obtaining resources (e.g., advice). This experimenting process may then be followed by the development of selection preferences over certain communication partners. Over time, these communicative practices and partners can become routine in an organization's operation. The routines that emerge reflect the notion of structural inertia. Some scholars that consider structural inertia assess the impacts of environmental jolts and offer reasons why reliable, established links might prevail. Relatedly, Hannan and Freeman (1977) argued that in the context of major environmental threats, organizations do not make radical changes. Adjusting aspects of organizing would seem distracting during an attempt to survive under threat. And in routine times, the power of preexisting relationships drives organizational stability and becomes reified in the organization's practices, thus making fundamental change difficult.

But in NOLA, the population was nearly half of the city's pre-Katrina levels (N.A. New Orleans Disaster Plan, 2006), creating an environment that would necessitate change. The impact of the 2005 hurricanes can be likened to the environmental jolt that previously studied technological advances have had on the evolution of organizational forms. For example, Astley (1985) explained such moments in the context of technological innovation as "discrete origins and extinctions .... [that] 'punctuate' extended periods of negligible change or 'equilibrium'" (p. 230). In terms of VSR, disaster was a unique jolt because organizations were forced to change their networks in response to rapid and unpredictable depletion of resources and IORs in the environment, at least in the time immediately following the event. The disaster disrupted equilibrium, so post-disaster networking could be viewed as a time when organizations cycled through evolutionary processes again, starting with variation to test out new links. Indeed, organizations may try to stick to their routines, but they

may also experience new variations, or both -patterns reflective of simultaneous (Aldrich & Ruef, 2006) and iterative (Freeman, 1981) VSR processes. This thinking draws on Schumpeter's (1934) description about the ways an innovation jolts a stable state and kicks the variation of a species back into trials that evolve into selection and retention.

This punctuated equilibrium orientation departs from the incremental, gradual change and instead focuses on distinct episodes of perturbance (Gersick, 1991; Lewin, Weigelt, & Emery, 2004; Tushman & Romanelli, 1985). Punctuated equilibrium considers internal organizational processes (Gersick, 1991) but more broadly considers the ways in which organizations break out of inert (static) states (e.g., Hannan & Freeman, 1984). At the interorganizational level, when a jolt like a disaster hits, the organization's network is also impacted. So, the disaster context presents a survival tension that is not adequately addressed by evolutionary or ecological theorists. On the one hand, scholars like Hannan and Freeman (1977) note that turbulent times are when tried and true relations are vital (structural inertia). On the other hand, if the jolt impacts the whole interorganizational community such that each organization is struggling, are those former partnerships sustainable? Do IORs predating an environmental jolt across an entire community survive or is it a time when new relationships are tried (or sought) out? Considering the unique jolt the hurricane season presented, we consider these tensions and thus ask:

> RQ1: What are the dynamics of post-disaster IOR networks in terms of stability (structural inertia) and change (punctuated equilibrium)?

Scarce Resources and Evolution. The stories analyzed in Doerfel et al. (2010) focused on the mobilizing of social capital to acquire networks and the resources in them, but did not consider the extent to which participating organizations ranged in terms of resource-holding capacity. Studies have confirmed that relationships can be structured to improve access to financial resources (Stearns & Mizruchi, 1993) and reducing uncertainty (Lang & Lockhart, 1990). Other work has shown resources and access to resources as mechanisms that contribute to network position (Oliver, 1991; Pfeffer & Salancik, 1978). Resource wielders evolve as more central and influential in their IORs (Doerfel & Taylor, 2004). Studies that consider resource scarcity underscore "the value of classifying firms according to basic differences of product or service and differences in relationship to environments" (Romanelli & Tushman, 1986, p. 614). In other words, some organizations are insulated from unplanned events (e.g., corporations have the resource capacity to retain payroll), whereas others might be more vulnerable (e.g., a local café needs the week's receipts to make payroll). Resource-holding capacity can be viewed in terms of organizations' ability to hold and obtain resources. Resource-vulnerable organizations, for example, may be those that rely on others (e.g., charitable contributions; grants) or are particularly reliant on a physically present customer base (e.g., retail and restaurants). Resource-insulated organizations have holdings that buffer environmental distress such as having

specialized information, not needing physical co-presence with clients, or they could be part of a large and financially advantaged institution.

At early recovery stages in NOLA, resources across the city were scarce (Doerfel et al., 2010; Runyan, 2006). In post-Katrina NOLA, organizations that did return had varying levels of success (Doerfel et al., 2010) and the resources fundamental to organizations' functioning (workforce, physical supplies, communications infrastructure) were dramatically depleted. Organizations were displaced from their established routines, yet many were passionate about returning to their home (Doerfel et al., 2010). Indeed, some returned immediately despite little-to-no basic infrastructure such as electricity. We thus consider whether and how resource-insulated and resource-vulnerable organizations exhibited different networking patterns across phases of disaster recovery:

> RQ2: How do the network profiles of resource-insulated and resource-vulnerable organizations vary in different phases of disaster recovery?

Resilience and Social Capital. Networked forms of organizing support flexibility through partnering with varying others to share resources and transfer information. Network structure has implications for the organization of relationships among network members, and for the types of information passed among members. Social capital refers to the resources embedded and available in social relationships that are accessed and/or mobilized by actors in purposive actions (Lin, 1999, p. 35). Social capital is embodied in relationships, and represents resources that social contacts and structures of contacts afford in a network (Doerfel et al., 2010). Social capital taps into the idea of network structure by examining the information and resources shared by bonding (cohesive, dense) and bridging (diverse, outreaching) networks. Having a balance of bonding and bridging ties may be theoretically ideal in terms of efficiency and effectiveness (Burt, 1992); however, practicalities such as time and resources dedicated to building robust networks may be difficult after a system-wide interruption. On the one hand, social capital theory is about building dense networks for organizational support and gleaning trustworthy information. On the other hand, innovation and creativity are driven by the diversity in one's networks. Powell, White, Koput, and Owen-Smith (2005) showed important advantages in the evolution of the life sciences field of having diverse ties to more broadly linked partners or with others whose ties are well linked.

Dense networks are made up of members who are highly familiar, often similar, and have a long history of repeated interaction, so dense networks are viewed as cohesive and closed (Ahuja, 2000). Similarly, networks based on homophily can provide quick access to commonly used resources. In fact, Hulbert, Haines, and Beggs (2000) found that homophilous relationships are beneficial in times of structural turbulence and become more important during crises. Such networks also facilitate trust and cooperative exchange, which in turn provide clear norms that lead to easy exchange and high cooperation. This may not lead to greater innovation, but it can influence decision-making power and an environment of trust in which members are more willing to take risks. In Doerfel et al. (2010), social capital was central to

organizational survival after disaster; however, quantitative variation over phases was not assessed. Moreover, Doerfel et al. (2010) emphasized "what worked" with broad brushstrokes and did not control for varying degrees of success in the organizations' return experiences. Broadly speaking, the underlying implication is that organizations with more social capital in terms of dense social networks are more resilient because they reap benefits having to do with information and resource access.

In terms of creativity and survival, however, more *diverse* networks have their advantages (Powell et al., 2005). Post-disaster, information flows could include details about how to get back into the area before evacuation orders are officially lifted, the quickest way to access new cash flow, or simply where to get clean water. Diverse networks could facilitate acquiring such information and offer ideas for solving the unique challenges created by the unprecedented circumstances. That is, dense networks (bonding social capital) may be more advantageous because of the need for trustworthy information, but diverse networks (bridging social capital) could be more critical for finding creative solutions to the unique scope of disaster-related problems. Other research points to bridging social capital (diversity), facilitating access to resources and coordinating action (Podolny & Baron, 1997). For example, network diversity has affected the degree to which information and resources can be beneficially obtained and leveraged by network members (Garguilo & Benassi, 2000; Hulbert et al., 2000; Podolny & Baron, 1997). There are thus different views on what type of network provides the most benefit.

Moreover, norms and reciprocity based on obligation may actually hinder access to information and resources. This view asserts that advantage lies in having an open network structure in which members are connected to many actors who do not share connections with each other (Ahuja, 2000; Podolny & Baron, 1997; Powell et al., 2005). These networks contain less "amplified reciprocity," or tendency for members to act against their own benefit out of a sense of obligation, which in turn frees members to act in ways that promote the current situation (Garguilo & Benassi, 2000). Actors can then span several networks without being deeply embedded in any given network, thus having access to unique resources without pressures like loyalty or conformity. Such networks are associated with flexibility and innovation, because they tend to contain more diverse members with less overlap of resources. Whether organizations form open or closed networks can have implications for their success in reestablishing themselves post-disaster. In short, bonding and bridging social capital suggest advantages, but understanding those advantages in the context of disaster and organizational resilience remains unclear. We thus ask:

RQ3: How do types of social capital relate to organizational resilience?

Hannan and Freeman (1984) argue "the most important issues about the applicability of evolutionary-ecological theories to organizations concern the *timing* of changes" (p. 151, emphasis retained). Given an evolutionary framework and our interest in disaster recovery for organizations embedded in cross-population communities, we consider the interplay between organizations and their communities

and consider timing by arguing that the disaster is an environmental jolt that punctuates the system's equilibrium. Post-disaster NOLA, then, provides field-based research to understand the survival processes and the role of networks over the course of a VSR cycle. As Astley (1985) argues, cross-population convergence also happens and organizations become fused together into "functionally integrated systems, or organizational communities. Only those populations able to function as constituent members of such communities survive" (p. 225). Community survival may be reflective of selected variation of IORs. We thus shape this paper around IORs and networked structures that may be organizing mechanisms in resilience and thus survival. In the post-Katrina NOLA disaster context, we present two-mode network data from a study of a variety of organizational populations and how those particular organizations engaged other organizations as they moved through stages of recovery and rebuilding. The next sections review the collection of cases and the way two-mode networks were analyzed. We then discuss our findings and their implications.

Methods

Hurricane Katrina caused such large-scale destruction that over a year later, limited return had occurred on the part of NOLA citizens and organizations with the population at about 60% (Nossiter, 2006). In the immediate aftermath, public services (e.g., electric, phone, water) were wiped out or were very limited in availability. Service availability spread to many areas by around December 2005; however, in other areas, like the 9th ward district, a lack of services still left perilous living conditions. Over two years, city visits became less about seeing the storm's wreckage, even though blue-tarped roofs and ongoing construction remained a presence throughout the course of the field visits. In this context, field research and interviews took place.

Participants and Convenience Sampling

The subject of interest was organizations across populations. Informants were those in charge and making or privy to critical decisions (e.g., owners, CEOs, presidents). In-depth, semi-structured interviews were conducted. Interviews were conducted with 64 different organizational and business leaders from December 5, 2005, until August 2007 and ranged from 12 to 105 minutes ($m = 52.42$ minutes, $SD = 17.28$). Whereas the sample was biased toward those who returned and began rebuilding, the method complemented the central concerns about the evolutionary framework and resilience. Initial contact was made with a professional business networking club located in NOLA. The first author recruited business owners and organizational leaders who participated at the organization's first official meeting held after Katrina. Subsequently, 11 field visits enabled the first author to recruit when attending various public events such as at the Bring Back NOLA Commission meetings and when visiting shops, restaurants, and businesses. An additional five field visits for

completing interviews were made by other research team members, including two professors and three graduate students.

Interviews were with a variety of organizational types, with varying degrees of destruction to their communication and physical infrastructures. Financial data were not available in most cases. Interviews included problems considered structural aspects that can impact the selection of communication partners. Participants discussed the status of employees and communicating with them via information and communication technologies (ICTs) and the extent to which physical damage to working space impacted business. Organizations in this study include (1) fewer than 10 employees, including the owner ($n=22$); (2) small entities consisting of 11–20 employees ($n=11$); (3) medium-sized entities consisting of 21 100 employees ($n=17$); and (4) large entities having greater than 100 employees ($n=6$). Most organizations required physical space or to be present in NOLA to operate ($n=33$), could (at least temporarily) operate with some mix of face-to-face and virtual work but at some point needed to be local to operate ($n=21$), or could fully operate virtually ($n=2$). The amount of physical damage sustained to properties ranged from extensive (e.g., parts of roof off, uninhabitable space, numerous broken windows, flooding inside; $n=18$) to minimal (e.g., usable space but some damage like a broken window or lack of electricity; $n=36$; not including two virtual organizations).

Interviews

This study uses 52 first-round[1] interviews conducted between December 2005 and April 2007.[2] More than half of the first-round interviews were conducted in the first eight months following the storm ($n=33$). We collected another five first-round interviews in August 2006, two in November 2006, and one in January 2007. An additional 15 Time-1 interviews were gathered in March and April of 2007. Although conducted at different times between 2005 and 2007, all interviews followed the same basic interview protocol and directed participants to address former relationships, what they actually did in the immediate aftermath of the storm as well as when they returned to NOLA. While later interviews sometimes included more detail about later stages of recovery, each of the interviews covered the same basic topics as guided by the interview guide.[3] Although the interview guide was used to ensure consistency across interviews, participants generally addressed the interview topics with minimal prompting by the interviewer. The protocol included questions that asked participants to characterize their IORs before, while displaced, immediately upon return, and once their activities were again routine. Participants discussed information gathering and connecting with old and new partners following the hurricane, use of ICTs, lessons learned, and what helped and hindered them in their efforts to return to business. Questions were open ended, and participants were also asked to include any information that they thought were important to their personal stories. Stories provided robust accounts of relationship management and communication challenges. As reported in Doerfel et al. (2010), the sequence of events was easy for participants to recall, and because the event was highly salient (Norris & Kaniasty, 1992; Pearson, Ross,

& Dawes, 1992) they offered distinct details that allowed for phases of before, during, and immediately after the storm, as well as once settled into a routine, to emerge. The amount of time spent in post-storm phases ranged, but there were particular qualities about the interviews that allowed for demarcating phases. We elaborate on how coders identified phases of recovery in the below section about *over-time phases.*

Procedures for Coding Interviews

Over 1,500 pages of interviews were assessed over a two-year period by a team of seven people. While the first author was involved in all steps of the data collection and analysis process, other members of the research team participated in varying degrees. Some members participated in early stages of code creation and other members then refined and applied the codes to interview transcripts. Coders who were not interviewers were active in creating the coding scheme and their "once-removed" relationship with the data helped balance out the interviewers' potential biases and vise-versa. Coders who were involved in the earlier part of the coding process were not involved in the creation of this paper, thus alleviating the potential for the creation of codes biased toward the subject of this paper. Alternating team members in this way allowed for fresh perspective and objectivity in data analysis. However, keeping a core group of team members for the entire process ensured that research goals, as well as an understanding of both the corpus and the context in which interviews took place, would remain a central focus of the analysis.

A constant comparative technique (Boeije, 2002; Miles & Huberman, 1994; Strauss & Corbin, 1998) was used to inductively create codes data using the ATLAS.ti computer program. Coders independently evaluated transcripts, then, with coding partners, compared emergent themes and discussed their differences and similarities. Teams then met together to discuss all emergent themes across initially coded interviews. Over the course of several meetings, the team developed a coding scheme. Next, three different interviews per pair of coders were analyzed; then, the entire team met again to review the coding, any newly emergent themes, and issues raised in applying the codes created from the initial ones. After revising codes, an additional two interviews were coded independently, with coders meeting to compare results, resolve differences, and finalize the codebook. At this stage, each pair of coders reported consistent agreement about episodes that needed to be coded and agreed that a highly reliable and valid coding scheme was achieved.[4] All transcripts were then coded using ATLAS.ti. Each transcript was coded by two coders but to avoid intra-team biases, coding partners varied. ATLAS.ti allows the analysts to search the entire corpus for those quotes that were coded with the categories, including each mention of a named communication partner or IOR.

To capture all salient contacts named by organizational leaders, ATLAS.ti queries were used to search for discussions about sources of useful emotional, informational, and financial support. To capture the longitudinality of the link, ATLAS.ti queries were made for codes representing timing (before the storm, while evacuated, immediately after, and link connected after settled in). Any time a contact was named

Table 1 Alter types coding categories and brief description.

Alter named	Description
Advocacy	Organizations whose mission is to promote NOLA
Association (Inst)[a]	Organization is member of a professional association
Association (Pers)	Individual is member of an association and membership is mostly personal
Association (Prof)[a]	Individual is member of an association and membership is primarily professional
Bank	E.g., Bank of America; Whitney Bank
Bring Back NOLA	
Business (different type)[a]	For-profit (private, corporate) business named and is in a different population than ego
Business (personal)	For-profit (private, corporate) business named and was linked to for primarily personal reasons
Business (same type)	For-profit (private, corporate) business named and is in the same population as ego
BusInsurance[b]	Insurance agency/company that is linked with for business not personal coverage.
City Govt[b]	Government office/agency within city domain and tie is through a known representative
City Govt (inst)[b]	Government office/agency within city domain and tie is institutional only (i.e., ego does not have a named person as a contact)
City Govt (pers)[b]	Government office/agency named for personal, not professional reasons
Client(s)[a]	
Coast Guard[b]	Kept distinguished from general military code because of their qualitative presence in some interviews.
Contractors (pers)[b]	Building/repair contractor named for personal reasons (e.g., home repairs)
Contractors (prof)[b]	Building/repair contractor named for professional reasons (e.g., building repairs)
Elem/HS[b]	Primary or secondary school named
Employees	
Endow/FundSource	Endowment or funding source named (e.g., Rockefeller Foundation; Entergy Foundation)
Faith (pers)	Faith-based tie for personal reasons
Faith (prof)	Faith-based tie for professional reasons (e.g., collaboration with Catholic Charities)
FamEntertainment	Zoos, museums
Fed Govt[b]	Federal Government agency or office
FEMA[b]	Federal emergency management agency
Govt agency[b]	Government agency but interview not specific enough to identify level of government
Higher Ed	University, college, other higher education institution named
Individual/pers	Individual named and association is personal
Individual/professional	Professional association with individual, but their organizational representation is not apparent
International Govt[b]	International government agency or office named
Library[b]	
Lodging	When people/organizations use hotels for sleeping (not professional alliance/collaboration)
Media/informational	Named media as a source of information; not a collaborative professional link
Media/prof	Named media organization/outlet as a collaborative/professional link
Medical/pers	Health care provider for personal needs

Table 1 (*Continued*)

Alter named	Description
Medical/prof[b]	Health care provider/organization named as professional link
Military[b]	E.g., National Guard, US Marines, Army Corps of Engineers
Nonprofit (pers)	Linked to nonprofit organization for personal reasons
Nonprofit (prof)	Linked to nonprofit for professional reasons
PerfArts/CulturalCntr	Performing arts organizations, theaters, performance space
PersInsurance	Insurance agency/company that is linked for personal reasons
Red Cross	
SBA[b]	Small business administration
Stakeholders	General organizational stakeholders not categorized in more specific code
State Govt[b]	Government office/agency at state level
Supplier(s)[a]	Supplies ongoing material or informational resources. This category is more specific than the general business categories (above)
Umbrella	Larger organization to which ego answers (i.e., ego is branch of or outlet for larger entity)
US Post Office	

[a]This code also captures that the alter is in a different population than ego, [b]This code infers diversity because no within-population organizations were interviewed for this study.

in the corpus, that unique contact was named, and the codes on Table 1 were used to categorize the contacts, or alters, so that comparison across cases could be made.

Study Variables

Resource-holding capacity. Organizations were dichotomously categorized in terms of their ability to hold and obtain resources, which is a pre-disaster condition. Resource-vulnerable organizations were those that have to acquire their primary financial resources through charitable contributions and grants or are particularly reliant on a physically present customer base. Thus, nonprofits and retail/ restaurant businesses were categorized as resource-vulnerable (n = 31). Those deemed resource-insulated (n = 21) disseminate financial resources, hold specialized information and do not require a physical co-presence with clients to operate, or are a branch of a large, multinational, for-profit institution. Knowledge work firms, large businesses, foundations, and the first responder were categorized as resource-insulated. Resource-holding capacity was used to answer RQ2 and further examine RQ1.

Resilience. Participating organizations were coded into mutually exclusive groups based on comments made throughout their interview that reflected their own organization's successes and their outlook about the general future for both their specific organization and NOLA, in general. Particular observations were shaped by aspects of resilience including capacity for resourcefulness, effective communication, and the capacity for self-organization in the face of extreme demands (Kendra & Wachtendorf, 2003). Using the ATLAS.ti query tool, text searches for the code "perception of return" provided summaries of all relevant quotes. Then, pairs of

coders evaluated this evidence independently and coded the organization for resilience in terms of low versus high resilience. The coders had complete agreement. Resilience varies dichotomously with low-resilience (n = 16) versus high-resilience organizations (n = 36)[5] and was used to answer RQ3 and further explore RQs 1 and 2.

Over time phases. Four phases included (1) pre-disaster – those IORs discussed in the context of doing business prior to the storm; (2) displaced – the time when the organizational leader was displaced; (3) post-ASAP – the time depicted by activities conducted immediately upon return and before routine was established; and (4) post-settled – the time when the leader reported being back to a routine in terms of business functioning. While these phases are chronological, they are not defined by a fixed time such as days or weeks. Each organization passed through these phases, but at varying times. Each phase has a corresponding two-mode network for answering the RQs. As part of the interview protocol, when the timing of connecting with a tie was not made apparent by the participants, they were probed about the timing and nature of the connections they reported making with other organizations, as noted in the above section heading Interviews. Coders were thus able to easily identify ties made before the storm (phase-1, or Pre-Katrina), ties made during the participating organization's evacuation of NOLA (phase-2, or Displaced), ties made as soon as possible and/or immediately upon the participating organization's return (Phase-3, or Post-ASAP), and ties made or retained after they had settled into a routine of post-disaster "normalcy" (Phase-4, Post-Settled). That phases were more readily memorable and meaningful to the participants than particular dates or length of time meant coders qualitatively identified phases. These are thus sequential phases, not chronological time-stamps.

Two-Mode Network Analysis

Although all of the participant organizations could be viewed as one large system – NOLA – very few organizations identified other participants as part of their system, thus indicating the presence of numerous subsystems within the broader community. We therefore treat the data as two-mode networks, where each participant's contacts were coded for particular categories of organizations (Table 1). In this way, the second mode represents the collection of *organizational types*, which are listed on Table 1, with whom networking takes place. Two-mode network data have been used for decades (e.g., Breiger, 1974) and enable the researcher to assess dyadic relationships and general social structural qualities as a function of shared connections to alters, or contacts, by the interviewees (Borgatti & Everett, 1997). Normally, two-mode network data concern themselves with actors (egos) and events (alters) to which actors attend. In this case, instead of events, the alters are those entities (e.g., organizations, businesses, types of individuals) to whom organizations turned. We consider this an organization-level way to depict density and diversity, in line with the way diversity was measured by Hampton, Lee, and Her (2011), who

argue that for individuals surveyed, their network ties' occupation is a way to assess diversity. Similarly, identifying types of organizations to which participants connect, diversity can be analogously assessed. Much like the procedures used by Hampton et al. (2011) when a participant *i* named another organization *j* as a contact (even if also a study participant), organization *j* was categorized for organization type for the second mode. The more variety of types an organizational participant named, the greater the organization's network diversity.

Two-mode network derivations. Each participating organization (n = 52) was assigned its own row, which was populated by the number of times they named a particular organization over the four phases. The total number of links identified by all participants was 923. If a specific organization was named more than once, it was counted only once in a phase; if different organizations were named that were categorized as the same organizational type (Table 1), they were each counted. If an organization type listed in Table 1 was not mentioned, the corresponding column was assigned a zero. Organizations discussed in a negative light (e.g., ineffective) or identified but not reachable were included in the coding but a value of zero was assigned. Then, each row's cells for each of the four phases were divided by the total number of contacts named by ego, across all phases. A resulting two-mode (n x m) matrix represented the organization and business leaders' (n = 52) reported contact ties (m = 49). Thus, matrices are valued and rectangular and represent the extent to which ego, n, named contact types, m, as links used (or not) over four phases. Four n x m networks (one for each point in time) were constructed. These matrices were then used to extract sub-matrices based on the variables resource-holding capacity and resilience. In other words, n x m matrices representing (1) resource-holding capacity-insulated; (2) resource-holding capacity-vulnerable; (3) high resilience; and (4) low resilience were extracted from the n x m networks from the four phases. Two-mode matrices were also used to compute density and diversity (see below).

Affiliations matrix construction and IOR community networks. To answer RQ1, relationships among the contacts named by organizations, that is, the network profiles of the organizations, were assessed using the Quadratic Assignment Procedure (QAP) as well as Multiple-Regression for matrices (MR-QAP), which requires square matrices. In other words, the two-mode network can be transformed to reveal relationships among the contacts named as a function of those organizations who named them. Square matrices were created in UCINET-6 (Borgatti, Everett, & Freeman, 2002) using the Affiliations option to convert the original n x m matrix into an m x m matrix for each phase. The minimum method was used because the data are valued, and thus, the resulting cell sizes do not increase exponentially the way taking a cross-products approach would (Borgatti et al., 2002). The resulting square matrices, $m \times m_{1-4}$, (subscripts represent each phase) are a relational representation of named contacts (SOs) in the post-disaster IOR systems and are how the IOR

networks are represented. QAP, a way to compute correlation between pairs of cells in two matrices, and MR-QAP, a way to compute regression on network matrices, were both conducted in UCINET-6. Both QAP and MR-QAP take into consideration the fact that network matrices are not independent (see Dekker, Krackhardt, & Snijders, 2007).

Centrality. To answer RQs 2–3, centrality analysis was used to assess all of the contacts named (Table 1) in general, and to assess the contacts named specifically for the resource-insulated and resource-vulnerable subnetworks, and the low- and high-resilience subnetworks. Degree centrality (Freeman, 1979) is a measure of how many other members of the network a given member is directly connected to. In this study, those SOs that are reported most frequently, and therefore have high degree centrality, are seen by the collective as important because they represent the most relied upon organizations in a network. Degree centrality was computed by taking the mean of the column totals on the n x m matrices for each phase. Thus, organizations that were named as links by the multiple organizations and those with stronger values emerge as more central.

Density. Density assesses the relative activity of a network and was calculated for each of the resilience m x m networks using the compare densities option in UCINET-6. Density is based on the total number of ties and accounts for multiple ties to the same organizational types. The way the original $n \times m$ matrices were constructed (see above), densities were normalized, thus enabling comparisons across matrices.

Diversity. Diversity was assessed by analyzing the n x m matrices' most central members and the extent to which contacts are within the same population as ego's (the participating organization) or are part of the more general community. The list of organizations on Table 1 includes details about how some contacts are, by virtue of their definition, within an organizations' population or not.

Stability. The RQs consider the relative network stability of resource-insulated versus -vulnerable organizations (RQ2) and low- versus high-resilience organizations (RQ3), which can be inferred by analyzing the corresponding m x m networks' QAP correlations over phases and by assessing the SO's centrality rankings and the extent to which particular SOs' centrality rankings change over time.

Results

RQ1 asked about the dynamics of post-disaster IOR networks in terms of stability (structural inertia) and change (punctuated equilibrium). To examine how the IOR

Table 2 MR-QAPs of Pre-Katrina, displaced, and post-ASAP networks predicting post-settled phase.

MR QAPs	*R*-square	Adjusted *R*-square	Probability	No. of observation
Whole network	0.84	0.84	0.000	2352
Resource insulated	0.85	0.85	0.000	2352
Resource vulnerable	0.70	0.70	0.000	2352
High resilience	0.82	0.82	0.000	2352
Low resilience	0.71	0.71	0.000	2352

Standardized coefficients (significance)

	Whole network	Resource insulated	Resource vulnerable	High resilience	Low resilience
Intercept	0.000	0.000	0.000	0.000	0.000
Pre-Katrina	0.72 (.000)	0.75 (.00)	0.65 (.000)	0.73 (.000)	0.60 (.000)
Displaced	−0.08 (.00)	0.03 (.10)	−0.06 (.010)	−0.08 (.002)	−0.02 (.169)
PostASAP	0.30 (.000)	0.20 (.00)	0.27 (.000)	0.30 (.000)	0.34 (.000)

community changes and evolves over phases of disaster, MR-QAP analysis was computed (see Table 2 for results) on the extent to which the first three over-time phases predicted the post-settled contact networks in general, as well as specifically for subnetworks constructed for the variables *resilience* and *resource-holding capacity.* Results show consistently, across resilience, resource-holding capacity, and for the whole networks, the strongest predictor of post-settled networks were the pre-Katrina networks ($\beta = 0.72$, $p = .000$), and this was strongest for high-resilience and resource-insulated networks ($\beta = 0.73$, $p = .000$; $\beta = 0.75$, $p = .000$). The adjusted R^2 values were lowest for the low-resilience and resource-vulnerable contact networks, but the trends remain consistent: over time, organizations—regardless of their relative resilience or the extent to which they are deemed resource-insulated—returned to their former relationships in the aftermath of the disaster. One notable variation, however, was that for low-resilience organizations, the displaced phase was not a time when networking activities even weakly predicted subsequent networks ($\beta = -0.02$, n.s.).

Centrality analysis of the n x m networks over four phases showed that the ranks of the key SOs were significantly different over phases ($\chi^2(3) = 28.571$, $p = .000$).[6] *Post-hoc* analysis with Wilcoxon Signed-Rank showed that there were significant differences between phase 1 and phase 2 ($Z = -4.146$, $p = .000$), between phase 2 and phase 3 ($Z = -3.218$, $p = .001$), and between phase 3 and phase 4 ($Z = -3.003$, $p = .003$). There was no significant difference between phase 1 and phase 4 ($Z = -0.986$, $p = .324$). Based on the top ranked organizational types identified, the types of entities to whom organizations turned after the storm included professional associations, businesses (different type than the focal organization), clients, suppliers,

and businesses (same type). One notable shift was the media (prof) contact, which moved into the top 10 at the last phase, reflecting organizations' need to mass-communicate/advertise.

RQ2 asked how the network profiles of resource-insulated and -vulnerable organizations varied in different phases of disaster recovery. QAP correlations show moderate, then weak, but significant correlations between groups over time. Compared with resource-vulnerable organizations' correlations of pre-disaster networks with post-disaster phases ($r_{during} = 0.46$, $r_{ASAP} = 0.68$, $r_{Settled} = 0.81$; all $p = .00$), resource-insulated organizations tended to have network profiles that consistently correlated with their pre-disaster networks over time (i.e., high correlations, where $r_{during} = 0.71$, $r_{ASAP} = 0.72$, $r_{settled} = 0.91$; all $p = .00$). That is, resource-vulnerable organizations' networks were not as strongly correlated with their pre-disaster networks as their resource-insulated counterparts, but none of the differences were statistically significant ($Z_{during} = 1.291$, $p = .197$; $Z_{ASAP} = 0.26$, $p = .795$; $Z_{Settled} = 1.326$, $p = .185$).

To further explore the network profiles of resource-insulated versus resource-vulnerable organizations over phases, analyses were conducted on most central SOs across four phases (e.g., Resource-vulnerable$_{pre\text{-}disaster}$, Resource-vulnerable$_{during}$, Resource-vulnerable$_{ASAP}$, Resource-vulnerable$_{settled}$). Professional associations were ranked first as the most popular organizational type reported by resource-vulnerable organizations in the first phase (pre-disaster). Analysis showed that there were significant differences of the ranks of the SOs over time for resource-insulated organizations ($\chi^2(3) = 20.151$, $p = .00$). *P*ost-hoc analysis with Wilcoxon Signed-Rank Tests was conducted with a Bonferroni correction applied, resulting in a significance level set at $p < 0.008$. There were significant differences between pre-disaster and displaced phases ($Z = -3.281$, $p = .001$), between displaced and settled phases ($Z = -3.224$, $p = .001$), and between ASAP and settled phases ($Z = -2.763$, $p = .006$). Similarly, for resource-vulnerable organizations, the ranks of the SOs were significantly different over phases ($\chi^2(3) = 19.214$, $p = .00$). Yet *p*ost-hoc analysis with Wilcoxon Signed-Rank revealed significant differences between pre-disaster and displaced phases ($Z = -4.114$, $p = .001$), displaced and ASAP phases ($Z = -3.889$, $p = .00$), and displaced and settled phases ($Z = -3.567$, $p = .00$).

Taken together, the resource-insulated organizations had more stable network profiles following the disaster, but some change occurred when they resumed routine functioning. In contrast, resource-vulnerable organizations experienced change of network profiles when the disaster first struck, but no further change was seen when they tried to return to routines. Furthermore, based on the top ranked organizational types identified, the resource-insulated organizations' network profiles included contact with the business (same type as the focal organization) contacts over time, suggesting the maintenance of a community of practice. Other organizations included in resource-vulnerable organizations' network profiles suggest these "vulnerable" organizations were reaching out with limited success to a variety of potential others (e.g., city government, media for information). Moreover, the types of alters also indicate rebuilding challenges (e.g., contractors for professional reasons)

and mass communication challenges (media- professional), which meant the organization received media coverage or the organization turned to media outlets to publish mass communications.

In answering RQ3, which asked about types of social capital as they may relate to resilience, QAP correlations were conducted between low- versus high- resilience organizations' networks at each phase. Compared with low-resilience organizations (with correlations of 0.55, 0.64, 0.80), high-resilience organizations have stable network profiles (i.e., high correlations: 0.68, 0.72, 0.89), but none of the differences in correlations were statistically significant ($Z_{during} = 0.644$, $p = .519$; $Z_{ASAP} = 0.456$, $p = .648$; $Z_{Settled} = 0.987$, $p = .323$). Analysis of the most central contacts for high- and low- resilience organizations across four phases showed significant differences of the ranks of the SOs at different phases for high-resilience organizations ($\chi^2(3) = 23.694$, $p = .000$). *P*ost-hoc analysis with Wilcoxon Signed-Rank showed that there were significant differences between phase 1 and phase 2 ($Z = -3.385$, $p = .001$), between phase 2 and phase 4 ($Z = -3.379$, $p = .001$), and between phase 3 and phase 4 ($Z = -2.953$, $p = .003$). Similarly, for low-resilience organizations, the ranks of the SOs were significantly different at different phases ($\chi^2(3) = 27.692$, $p = .000$). *P*ost-hoc analysis showed that there were significant differences between phase 1 and phase 2 ($Z = -4.431$, $p = .000$), between phase 1 and phase 3 ($Z = -3.056$, $p = .002$), between phase 2 and phase 3 ($Z = -3.413$, $p = .001$), and between phase 2 and phase 4 ($Z = -3.653$, $p = .000$). In sum, these results suggest that, compared with high-resilience organizations, low-resilience organizations experienced more change of networks when the disaster first struck, but no further change was seen when they tried to return to routines.

In terms of different network structures, as evidenced by density values reported on Table 3, at each phase, SO network densities were significantly greater for high-resilience organizations. According to degree centrality analyses, the low-resilience organizations across all phases have the same top-4 contacts, but then the contact rankings are scattered and inconsistent over time, thus depicting relatively more volatility than for the key contacts for the high-resilience condition. Specifically, for low-resilience organizations, the top 5-6 ranked organizations at each phase show that organizations outside of ego populations were consistently named as contacts (e.g., associations- professional; business- different type; suppliers). Differences in the sixth to tenth most ranked organizations showed high- resilience organizational networks included turning to employees, endowment/funding sources, business

Table 3 Alter network densities of low- versus high-resilience organizations over time.

Ease of return networks	PreK mean	Displaced mean	Post-ASAP mean	Post-settled mean
Low resilience	0.024	0.006	0.014	0.017
High resilience	0.043	0.025	0.034	0.046
Bootstrap t-stat (significance)	−1.75 (.003)	−3.06 (.001)	−2.533 (.002)	−2.657 (.001)

(same type), whereas low-resilience organizations turned more consistently to professional individuals, banks, and media (professional) contacts. These results suggest that low-resilience organizations' networking patterns are more diverse than high-resilience organizations and those organizations that seem to contribute to diversity are those to whom a less resilient organization would sensibly turn (e.g., banks; insurance, government).

The results indicate volatile networks of resource-vulnerable and low-resilience organizations while resource-insulated and/or high-resilience organizations tended to have stable and focused networks. Stronger centrality values in the resource-insulated and resilient conditions also suggest that strong ties to key organizational types were rebuilt swiftly. SO Networks tend to have a mix of within-population alliances and most critical ones appear to be those that shape a community of practice (e.g., associations, suppliers, businesses that are the same type). Also, for these organizations, a few cross-community alliances such as complementary businesses (business-different type) and endowments/ funding sources and nonprofits are present, albeit at less of a degree than the within-population entities. On the other hand, for the low-resilience and resource-vulnerable, key contacts were scattered across a variety of SO types, suggesting attempts to leave "no rock unturned." Their displaced and post-disaster networks were more diverse across SO types than the resilient and insulated counterparts. Regardless of the advantages organizations appeared to have, the predominant pattern of networking was to rebuild their former networks, with pre-Katrina relations being the best predictor of the post-disaster "settled" networks. We next discuss these results in light of this paper's multi-theoretical framework.

Discussion

The interest of this study is on the organizing mechanisms of survival with a particular focus on the role of interorganizational communication. After disaster, organizations engaged in communicative activities that were shaped by past alliances and also mimicked networking practices prior to disaster. Evidence shows structural inertia as an organizing mechanism of resilience, regardless of a DSO's relative resources. At a more granular level, the types of communicative activities that reflect forms of social capital varied for resilient and resource-insulated organizations from their counterparts. Specifically, resilient and resource-insulated organizations' networks were more dense, indicating advantages associated with bonding social capital after disaster (i.e., they engaged in the same bonding after the storm, and vice-versa for bridging social capital). On the other hand, low-resilience and resource-vulnerable organizations' networks were more diverse, indicating less efficacy of networking marked by bridging social capital, after a disaster. Note that resource-holding capacity did not correlate with resilience, suggesting the ability for IORs to overcome resource capacity. In other words, an organization does not have to be a resource-insulated business to be resilient. The following discussion thus addresses two key theoretical contributions in terms of (a) structural inertia as an organizing mechanism for recovery, and (b) social capital as a driver of resilience, regardless of

resource-holding capacity. The second finding also points to the importance of efficient pre-disaster networking and the development of communities of practice.

Structural Inertia as a Post-Disaster Organizing Mechanism

In this study, past alliances are a driving mechanism in recovery and post-disaster survival. Pre-disaster links endured and were the focus of post-disaster re-networking. While this finding complements other research about the relevance of established links as IORs evolve (e.g., Shumate et al., 2005) and Hannan and Freeman's assertion that organizations, despite disruption, use their old routines, this study illustrates the disaster's impact on the equilibrium of the network and the change of networks over phases of rebuilding. Indeed, unique about this study is that these organizations' networking patterns revealed a swifter return to pre-disaster conditions. We thus assert that structural inertia is an organizing mechanism for recovery, and the sooner a DSO has contact with its former partners, the more likely it shows signs of resilience. Relatedly, resource-holding capacity was not a necessary factor in post-disaster recovery. This finding belies past assertions that the vitality of a system relies on resource-independent organizations (Doerfel & Taylor, 2004; Flanagin et al., 2001). On the other hand, this supports Uzzi's (1997) point that prior resource sharing and information transfer can lead to the flexibility of networked forms of organizing, thus enabling swift recovery, regardless of resource-holding capacity. A variety of organizations could suffer displacement from their region for weeks, suffer the consequences of a city's significantly smaller population in the aftermath, yet show strong evidence of a successful return.

Overall, the stability of DSO networks reflects the notion of structural inertia (Hannan & Freeman, 1984) in that, regardless of resilience and resource-holding capacity, organizations' re-networking after disaster appears to be about getting back to business as usual within the previously established relationships. Long-term recovery appears to be driven by the patterns of pre-Katrina IORs and not solely on resource-holding capacity. Consistent with Astley (1985), past communication patterns are reified structures that are difficult to change, particularly in times of distress. In other words, these stronger networks are an organizing mechanism in organizational survival/ evolutionary processes in post-disaster contexts.

Social Capital and Resilience

Disaster was not a time for building new IORs. For low-resilience and resource-vulnerable organizations, variation in terms of diversity of networks during displacement and immediate phases of recovery may have slowed the survival and recovery processes. Diverse ties may be useful for finding and disseminating information (e.g., they turned to media outlets), but they also reveal how these organizations were extensively networking. Resource-insulated organizations had less diversity and greater concentration (i.e., density) of networking activity in their displacement and recovery networks. This finding points to the relevance of effective

networking even before disaster hits, by having intact IORs with these vital organizational types. As a reminder, dense networks in this study means that organizations reported having multiple connections to particular SO types, which facilitates higher centrality for these SOs. In terms of Burt's (1992) social capital theory, he recommends structural holes with a balance of effective and efficient links, where the cost of effective ties is redundancy and efficiency's cost is that particular links constrain access to the broader network. In the case of disaster, redundant ties to particular SOs were not a cost (they were effective). Indeed, although diverse links can be an efficient way to span a network, these data suggest diversity's cost is resilience. Moreover, resource-vulnerable organizations might be better served networking to bond, not solely to bridge. Bonding social capital is a form of disaster insurance that could then bolster recovery.

Bonding Social Capital and Communities of Practice

For resource-insulated and resilient organizations, the overall support network was more stable. Types of SOs with strong and consistent ties revealed the organizing forces of specific contacts within a community of practice (i.e., professional associations and businesses- same type) as well as within and across the broader ecological community (i.e., suppliers, clients, businesses-different type, banks, endowments/funding sources, non-profits, and city government). IORs with these specific contacts retained their usefulness over time and were the central organizations to which the disaster-struck turned before and after disaster. The data also suggest the importance of having multiple ties within SO types, as these ties were consistently stronger for resilient and resource-insulated organizations in terms of both ease of return and access to resources. Low-resilience and resource-vulnerable organizations had relatively less stable ties (centrality values were lower than their advantaged counterparts), indicating fewer relationships with particular organizational types. In other words, considering how this study's networks were constructed, for the tie to a particular organization to be stronger, multiple organizations within that contact category had to be named (e.g., an organization may have multiple nonprofits as ties). This finding suggests that organizations that forged relationships with multiple contacts within populations bolstered their network (i.e., they had redundant ties). An emergent tension, then, is if an organization's network is too efficient (minimal ties to maximally connect the network), then the focal organization is beholden to the few other organizations to which the focal organization is connected (Burt, 1992). On the other hand, too much redundancy could exhaust the focal organization's resources. In the case of disaster, the redundancy of links to particular organizational sectors appeared to be an advantage to DSOs; however, this tension needs further empirical tests. Future tests could use both resilience research (Kendra & Wachtendorf, 2003; Weick, 1993) and efficiency/effectiveness of networks (e.g., Burt's structural holes theory) to further examine this tension.

An interesting fluctuation that underlines the power of communities of practice is the movement of businesses (same type) for high- versus low-resilience organizations.

Business (same type) fell to 28th place during displacement then eventually moved back up to 13th place for low-resilience organizations. On the other hand, business (same type) for high-resilience organizations was 6th before the storm, the same during displacement, then improved to 3rd place and stayed there in the aftermath. This variation between low- and high-resilience organizations suggests a few possibilities. First, for low-resilience organizations, their broader community was likely also struggling so much that they couldn't come to the help of one another. Second, the pre-Katrina relationships might not have been strong enough to sustain and thus, rebuilding such ties might not have been deemed as important as others. In light of the high-resilience organizational networks, however, our data suggest that relationships within one's population are important and worthy of organizations' time and attention. Citing analyses from Doerfel et al. (2010), business (same type) did the "thinking" for their disaster-struck colleagues while the victims couldn't think clearly on their own. These within-population organizations continued to support the disaster-struck with supporting information and strategies in later phases of recovery.

Disaster Drives Constraint-Side of Networks

Research suggests that organizational survival is a function of adhering to norms, expectations, and broader practices of peer organizations. Mimetic processes reify these patterns the way an iron cage constrains growth and transformation (DiMaggio & Powell, 1983; Weber, 1952). The data in this study suggest that disaster recovery is a context within which former IORs retain their importance to the DSOs and are thus a primary source of information and resources. Put another way, disaster is not a punctuated equilibrium event that affords an opportunity to change. What remains unanswered is the longer-term consequences for these organizations. For how long do these former relationships hold steady? Are disasters a time when structural inertia becomes even more difficult to break out of? Returning to disaster and resilience research, some of which speculates that victims often turn outside the realm of expected relationships (Kreps, 1984), these data suggest the opposite. Organizations, regardless of their resource-holding capacity and resilience, returned to former ties and engaged in the same bonding or bridging practices that they mostly engaged in prior to the storm.

The importance of IORs is nothing new in the extant organizational literature (c.f. Adler & Kwon, 2002; Gulati, 1995), yet this study underlines two important aspects to building IORs as part of disaster plans and general business functioning. First, having dense IORs within an organization's population provides strong reliable relationships that can be counted on when disaster strikes. Second, resource-holding capacity is sufficient but not a necessary cause of resilience. Having redundant, dense IORs in the professional community, particularly with professional associations, businesses (different and same type), plus the obvious ones (e.g., clients, suppliers) is tantamount to disaster survival.

Limitations

Organizations were biased toward success, because they were in NOLA when their leaders were interviewed. The data do not include organizations that had yet to return nor span enough time to identify those that eventually failed. Future research needs to consider more dire cases of those who have not returned or have lost their businesses. Variables like financial data were not consistently available across all cases. This limits findings related to resources, because our measure was based on traits, not actual resource holdings. Use of organizational types—not specific organizations—means that differences within organizational types are not accounted for (e.g., particular suppliers might vary). Finally, while great care was made at every phase of data management, a different team of researchers could glean information from their own interview-based data. Relatedly, data were based on recall, albeit about a poignant event. These decisions resulted in data that are unlike the quality of data afforded when all members of a system are polled, and such data can therefore confirm the veracity of relationships. Despite this, organizational codes enabled aggregate analyses of the cases and therefore comparisons across situations, extending survey research techniques that identify individuals' networks (e.g., Hampton et al., 2011) to IORs.

Conclusion

This study extended organizational evolutionary theory to disaster contexts and demonstrated the role of particular IORs to disaster recovery. The findings continue the opportunity/constraint debate about social networks in that disaster appears to reify former networking patterns that may strengthen the iron cage shaped by a community and its emergent norms, practices, and expectations. Despite this inherent network tension, findings depict network flexibility during disaster and that they facilitate speedy recovery. The findings underline (a) the extent to which disasters drive the constraint-side of networked forms of organizing because of organizations' reliance on their communities of practice and (2) and that resource vulnerability can be compensated with IORs. Organizations should recognize the power of communication relationships to stabilize their post-disaster circumstances, yet also ensure flexibility within their networks by having multiple ties within particular supporting organizational types.

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Notes

[1] Follow-up interviews were conducted with a subsample of participants and are not part of this study.

[2] A total of 64 unique organizations were part of the initial sample. Eight of the original interviews could not be used in this study because of recording problems ($n=4$), the informant requested to not be recorded ($n=3$), or the substance of the interview revealed that the organization never reopened and was thus substantially different than the others in the dataset ($n=1$).

[3] Contact the first author for the interview guide at mdoerfel@rutgers.edu

[4] The advantage of ATLAS.ti is that each instance of text that reflects codes can be labeled with all of the appropriate and relevant codes from the entire codebook. Quotes from interviews often revealed multiple theoretical themes and concepts simultaneously. The disadvantage is that a quantitative measure of intercoder reliability cannot be accurately calculated. The coders, however, noted the consistency with which they agreed about identifying episodes that needed coding (episodes could be a single phrase or as much as a paragraph or two) and that their code selections (from the codebook, Table 1) were consistently similar, too. Because of the extensive code list from which they could choose, they did regularly have minor differences about which codes each coder applied to the same episode. In all circumstances, coders were compelled to be sure their disagreements were resolved in a rigorous and thoughtful manner. No "standoffs" ever needed resolving by a third coder.

[5] A chi-square test with Yates continuity correction revealed that the percentage of organizations that were resource-vulnerable did not vary by resilience, χ^2 $(1, N=52) = 1.44$, $p = 0.23$.

[6] Tables reporting these results are available by contacting the first author at mdoerfel@rutgers.edu.

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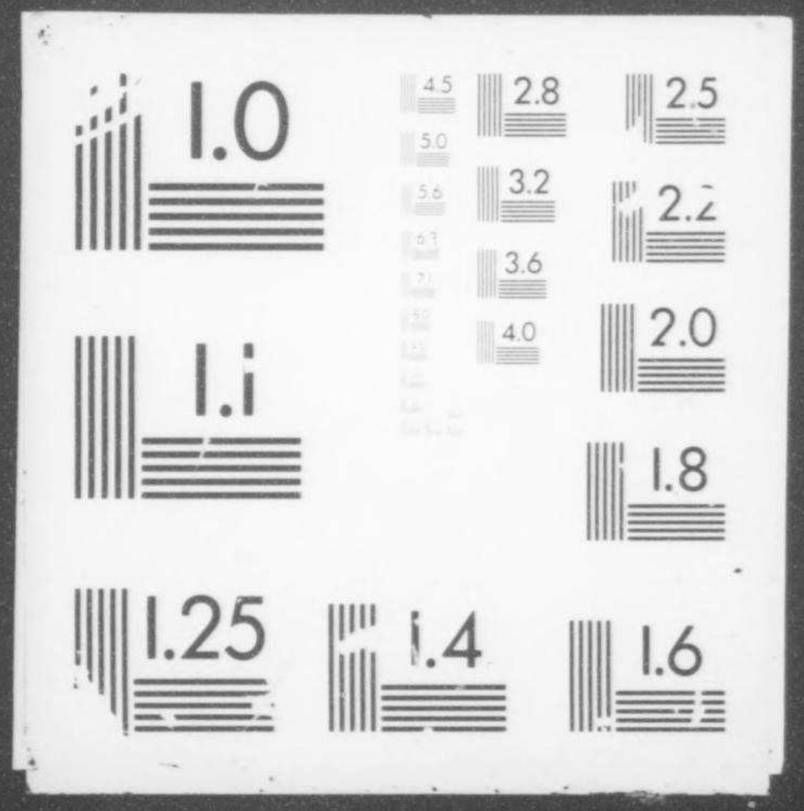
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