

Quantity and quality of communication during parental deployment: Links to adolescents' functioning

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ABSTRACT

Using an online survey methodology, we examined individual differences in distance communication between 75 adolescents and their deployed parents and found substantial individual differences in both the quantity and quality of their communication. We also examined the statistical associations between these features of distance communication and adolescents' functioning, including emotional reactions following communication, health-related quality of life, and externalizing and internalizing problems. The quantity of communication of deployed parents with their adolescents was not associated with adolescents' functioning, but more positive and less controlling communication was statistically associated with adolescents' higher functioning. Implications for theory, practice, and future research are discussed.

When parents and children are separated by distance for long periods of time, their relationships may suffer because it is harder to communicate about daily experiences and feelings as frequently or in the same way as when living under the same roof. We refer to such communication as distance communication. While physical expressions of affect such as hugs and kisses are missing in distance communication, we hypothesize that distance communication has the potential to help maintain and nourish relationships between parents and their children as others have hypothesized regarding such communication between civilian adults (Walther, 2011) and between grandparents and grandchildren (Holladay & Seipke, 2007; Mansson, Myers, & Turner, 2010). We also hypothesize that keeping in touch while geographically apart can support the functioning of the children involved.

This study is a small first step toward exploring the latter hypothesis as it pertains to deployed parents and their adolescent children. If this study and others to follow support this general hypothesis or determine the optimal quantity and quality of distance communication for children of different ages, the new knowledge could serve as the evidence base for interventions for parents and their children and youth who must be separated for months at a time.

Distance communication between deployed parents and their children has received scant attention in research (Houston, Pfefferbaum, Sherman, Melson, &

Brand, 2013; Wong, Gerras, & Army War College Strategic Studies Institute, 2010). It is often assumed that distance communication in the military family context would help families be more resilient (MacDermid-Wadsworth, 2010), but evidence of links between distance communication during deployment and children's functioning is sparse, complex, and inconclusive (Houston et al., 2013; Wong et al., 2010) and does not support the expectation that distance communication is always associated with greater resilience.

In our study, we focus on children between the ages of 11 and 18, since research suggests that youth have emotional and behavioral problems associated with parental deployment (Chandra et al., 2010; Gilreath et al., 2016) and since, unlike younger children, adolescents can independently complete online surveys about their communication with their deployed parents and about their emotions and functioning. We asked them questions that allowed us to report about (a) the quantity and quality of distance communication between their deployed parents and themselves and about (b) the association between the quantity and quality of the communication and their functioning.

Several lines of scientific inquiry motivated and informed our research. The first pertains to findings about the links between the long family separations due to military deployments and the functioning of military-connected children of different ages, including

adolescents. There is growing evidence that parental deployment is negatively associated with children's health, psychological adjustment, and academic performance (Park, 2011). Social scientists have hypothesized that these associations are due to the absence of the deployed parent and to the stress in the family due to a parent's deployment (Maholmes, 2012).

Another line of inquiry motivating our research pertains to the increasing role of technology-assisted communication as a means of building and maintaining relationships between members of the family in the civilian context (Webb, Ledbetter, & Norwood, 2015). While the focus of this literature is not on communication between deployed parents and their adolescents, we deemed it relevant to our inquiry regarding the merits of distance communication in the military deployment context.

Finally, our focus on specific aspects of communication quality and quantity is grounded in conceptualizations of interpersonal communication (Dillard, Solomon, & Palmer, 1999; Koerner & Fitzpatrick, 2002) and in research pertaining to parent-child interaction (Borkowski, Ramey, & Bristol-Power, 2002).

Our work is inspired by scientific studies that pertain to military families and to civilian families. While life conditions are different for military and civilian families, we assume that the principles underlying human communication, parenting and children's development are universal and not specific to either military or civilian populations. In the following sections, we elaborate on the different lines of scientific inquiry that motivate and inform our research.

Parental deployment and adolescents' functioning

Over the last 15 years, deployments of U.S. military personnel to Operation Iraqi Freedom, Operation Enduring Freedom, and the Overseas Contingency Operation have been long and repeated (Institute of Medicine, 2010). About 43% (42.7%) of the total Department of Defense force consists of parents. In 2013, across the Department of Defense, there were 1,177,972 children of active duty members, of whom 313,791 (26.6%) were between the ages of 11 and 18, the age of the adolescents participating in our study (U.S. Department of Defense, 2013). The scientific literature shows that both mothers and fathers have critical roles in the development of their children, from infancy through adolescence and that positive parent-child relationships are linked to children's psychological adjustment (Borkowski et al., 2002;

Lamb & Tamis-LeMonda, 2004; Steinberg, Darling, & Fletcher, 1995). The literature also suggests that adolescents' relationships with their parents are the most influential of all their relationships and shape most of the important decisions confronting them (Laursen & Collins, 2004). Therefore, when the deployment of a parent for long periods of time is associated with a decline in the deployed parent's involvement with the adolescent, the deployment may also be associated with negative effects on the adolescents' wellbeing (Barnes, Davis, & Treiber, 2007; Huebner, Mancini, Wilcox, Grass, & Grass, 2007; Milburn & Lightfoot, 2013; Mmari, Roche, Sudhinaraset & Blum, 2009; Reed, Bell, & Edwards, 2011). Moreover, military deployments are often associated with stress in family members who stay behind due in part to anxiety over the possibility that the deployed parent will be harmed and the need to adjust roles and responsibilities within the family (Booth & Lederer, 2012; Engel, Gallagher, & Lyle, 2010; Lester et al., 2010; Swedean et al., 2013). This stress, in and of itself, can negatively affect the family and the children (Barnes et al., 2007; Chandra et al., 2010). It is therefore not surprising that there is growing evidence of negative associations between parental deployment and the psychological, academic, and health functioning of children and youth (Card et al., 2011; Flake, Davis, Johnson, & Middleton, 2009; Lester et al., 2010; McGuinness & McGuinness, 2014; Milburn & Lightfoot, 2013; White, de Burgh, Fear, & Iversen, 2011).

While some of the aforementioned citations pertain to adolescents, the literature that specifically focuses on the effects of parental deployment on adolescents is limited (Maholmes, 2012; Milburn & Lightfoot, 2013). It shows that adolescents, more than younger children, can comprehend the meaning of their parents' deployment for the family and for themselves. Nevertheless, they are negatively affected by their separation from their deployed parents. The effects manifest themselves in anger, acting out, withdrawal, and apathy (American Psychological Association Task Force on Military Deployment Services for Youth, Families and Service Members, 2007), higher than expected post-traumatic stress and higher heart rate (Barnes et al., 2007), feelings of loss and uncertainty (Huebner et al., 2007), emotional difficulties and difficulties with academic and social engagement (Chandra et al., 2010), adjustment disorders and depression (Mansfield, Kaufman, Engel, & Gaynes, 2011), internalizing problems, externalizing problems, and school problems (Aranda, Middleton, Flake, & Davis, 2011), and more adjustment difficulties and lower incidence of prosocial behavior than in a comparison

sample of civilian adolescents (Wilson, Chernichky, Wilkum, & Owlett, 2014). Adolescents of deployed parents were also found to report more binge drinking, depressed mood, and suicidal ideation, and to commit suicide more frequently than adolescents whose parents were not deployed (Gilreath et al., 2016; Reed et al., 2011). However, despite the stress of parental deployment and the above-reported findings, many military-connected children and youth are resilient (Cozza, Lerner, & Haskins, 2014; Easterbrooks, Ginsburg & Lerner, 2013). There is already some evidence that when a parent is deployed, many children and youth become more responsible and independent (Andres & Moelker, 2011; Andres, Moelker, & Soeters, 2011; Huebner & Mancini, 2005).

Most of the findings to date pertaining to the links between parental deployment and its negative association with child functioning fit with conceptualizations of parent-child relationships and the evidence regarding the negative effects of long-term separations and stress on individual functioning (for review, see Maholmes, 2012). However, the validity and generalizability of the findings pertaining to military families can be questioned on methodological grounds. Studies of the psychological functioning of children and youth of deployed parents rely primarily on maternal reports and typically do not control for other known predictors of children's and adolescents' functioning (Card et al., 2011; White et al., 2011).

In this study, we provide the perspective of the adolescents themselves on both their communication with the deployed parents and their own functioning in terms of their emotional reactions to communicating and their health-related quality of life. We also provide the perspective of the at-home caregivers on the functioning of the adolescents in terms of the aspects reported by the adolescents and in terms of internalizing and externalizing problem behaviors. Since stress in the family, child age, and gender have been hypothesized and/or shown to be associated with military-connected children's and youth's outcomes (Chandra et al., 2010; Flake et al., 2009; Lester et al., 2010; Mansfield et al., 2011; Reed et al., 2011), we control for the effects of these variables. We also considered controlling for the number of deployments, the aggregated total length of deployments, whether or not the deployment missions involved combat, the limits on communication placed by the military command, and the perceived barriers to communication. Since our preliminary analyses did not reveal statistically significant associations between the adolescents' functioning and these other potential predictors of adolescents' functioning, we did not control for these variables.

Building and maintaining relationships at a distance

There is an increasing amount of literature regarding the role of technology-assisted communication in the creation and maintenance of relationships, including family relationships (see Webb et al., 2015 for a review). Most research on technology-assisted communication pertains to its use among geographically co-present individuals, especially family members, including parents and their adolescents (Kim, Kim, Park, & Rice, 2007; Rudi, Dworkin, Walker, & Doty, 2015). But technology-assisted communication has also become very important for maintaining relationships between geographically separated members of the family (Stafford, Kline, & Dimmick, 1999; Wilding, 2006). Consequently, there is a growing interest among communication researchers in examining distance communication as a means of maintaining and improving the relationships between nonresident parents and their children or the relationships between grandparents and their grandchildren, including adolescents (Neustaedter, Harrison, & Sellen, 2013; Rodriguez, 2014). While communication between deployed members of the military and their families is encouraged (Owlett, Richards, Wilson, DeFreese, & Roberts, 2015), there are barriers to such communication in the form of limited access to the appropriate technology, lack of privacy, and time zone differences between the location of deployment and home (MacDermid et al., 2005). Also, families impose additional barriers of secrecy on themselves to protect the deployed parent and the children (Owlett et al., 2015). But despite such barriers, one study found that during deployment, deployed fathers offered their children and adolescents advice, encouragement, and support (Willerton, Schwartz, Wadsworth, & Oglesby, 2011).

While technology-assisted communication is believed to provide social support to those using it (Webb et al., 2015), a minimal amount is known about characteristics of such distance communication (e.g., its quantity or quality) or about the effectiveness of distance communication between members of the family in promoting their functioning. Limited information comes from two studies of distance communication between deployed parents and their children. A study by Wong et al. (2010) using single-item measures assessed the frequency and depth of distance communication between a large sample of military deployed parents and their adolescent children aged 11–17. Their study revealed that adolescent-reported stress was greater if the parent and child communicated several times a week as compared to monthly or weekly. The direction of effects is

unclear; it is possible that those who were more stressed communicated more. Communication described as “engaged” was associated with lower stress than communication described as either “shallow or “deep.” Similar results emerged from a study by Houston et al. (2013) of a very small sample ($N=13$ from nine families) consisting of both children and adolescents (mean age = 11) and their at-home parents. When the deployment was over, the research participants were asked about communication before, during, and after the deployment. Frequent communication with the deployed parent and communication described as being of high quality were found to be associated with more child behavior problems and more anger and loneliness in reaction to the deployment. Both these studies have their limitations. However, their findings about parent-child communication and its links to children’s and adolescents’ functioning are inconsistent with the conceptualizations of and research about the role of close parent-child relationships and good parent-child communication in development (Lamb & Tamis-LeMonda, 2004; Laursen & Collins, 2004). Therefore, our research was intended to examine more closely features of distance communication between adolescents and their deployed parents and the association between these features of communication and the functioning of the adolescents.

Communication characteristics

Research on relationship development suggests that communication is a key component to establishing and maintaining close relationships (Solomon & Vangelisti, 2014). In research on distance communication of deployed peacekeepers with their families, Schumm, Bell, Ender, and Rice (2004) studied the frequency of communication with home, the methods (e.g., phone), and the function of distance communication. The function was defined in terms of quality characteristics such as showing support, exchanging information, staying in touch, sharing feelings, reducing feelings of separation, resolving disagreements, and so forth. In our study, we have also chosen to describe distance communication in terms of its quantity and quality, two dimensions of communication long used in describing parent-child and parent-adolescent interaction (Dutra, Miller, & Forehand, 1999; Fabricius, Braver, Diaz, & Velez, 2010; Tubman & Lerner, 1994).

The extent to which more distance communication is associated with better functioning of those communicating in the context of deployment is not self-evident and requires exploration. Families differ in the extent to which they encourage their members to communicate

when they are co-located, as emphasized in family communication patterns theory (Koerner & Fitzpatrick, 2002; Koerner & Schrod, 2014). In the context of deployment, the quantity of communication may reflect the family preference for little, moderate, or a lot of communication. The quantity of distance communication may also be an index of the family commitment to staying in touch despite objective barriers to communication or an indicator of relational satisfaction (Johnson, Amoloza, & Booth, 1992). Alternatively, the upper end of the distribution of the quantity of communication may indicate excessive dependency or distress as suggested by findings of Houston et al. (2013) and Wong et al. (2010) regarding military-connected children and adolescents and may predict less optimal individual functioning than does a moderate frequency of communication.

We assessed the quality of communication in terms of both positive and controlling communications from the deployed parents to the adolescents. Our assessments of communication quality are most closely aligned with the relational framing theory (Dillard et al., 1999). The theory describes two central dimensions of communication that are fundamental frames for making sense of messages: dominance and affiliation. It claims that these two aspects of human sociability are rooted in our evolutionary history and continue to define relationships. Affiliation is defined as the extent to which one individual regards another positively and acts in a way that expresses solidarity. Dominance reflects the degree to which one actor attempts to regulate the behavior of another. Therefore, affiliation can be related to parental acceptance, warmth, and supportiveness, dominance to parental control. Communication research suggests that high quality intimate communication is characterized by willingness to disclose information to others (Altman & Taylor, 1973), by positive, supportive interactions (Burlinson, 2003; Stafford & Canary, 1991), and by a relative lack of negative, controlling behavior (Escudero, Rogers, & Gutierrez, 1997). More specific to our focus on military-connected youth, research on adolescents’ development suggests that when parents are supportive, positive, and caring in their interaction with their adolescents, the adolescents are better adjusted than when parents are critical and controlling (Juang & Silbereisen, 1999; Parker & Benson, 2004).

We expect that the positive and controlling dimensions of communication manifest themselves not only in communication between people who are co-located but also in distance communication and that these communication dimensions are related to the functioning of the individuals involved. Therefore, in our study of distance communication between deployed parents and

their adolescent children, positive communication refers to the deployed parent's supportive and open interactions with his or her adolescent. Positive communication includes the expression of positive emotions and is absent of negative control. Controlling communication is defined in terms of attempts on the part of the deployed parent to regulate from afar the behavior of the adolescent.

Research goals and questions

Given the paucity and limitations of previous research, our research goals are to describe (a) the extent to which adolescents and their deployed parents engage in distance communication, (b) variations in the quality of the deployed parents and adolescents' communication, and (c) the extent to which the quantity and quality of distance communication are associated with the adolescents' functioning as indexed by emotions after communicating with the absent parent, health-related quality of life, and internalizing and externalizing problem behaviors.

Our specific research questions about the quantity and quality of communication were:

1. How frequently did the adolescents and their deployed parents communicate?
2. How long on average were instances of communication?
3. To what extent were instances of communication positive?
4. To what extent were they controlling?

Our specific questions about the association between distance communication and the adolescents' functioning were:

1. Was more frequent communication associated with better adolescent functioning?
2. Were longer communication instances associated with better adolescent functioning?
3. Was more positive communication associated with better adolescent functioning?
4. Was more controlling communication associated with poorer adolescent functioning?

Methods

Sample

The sample for this study consisted of 75 adolescents who had a deployed parent away from home on a military assignment of one month or more and who responded to a survey about the distance communication between themselves and their deployed parents, and about their functioning. The sample also consisted of the at-home parent ($n = 73$) or other at-home

caregivers ($n = 2$) of the same adolescents. The at-home parents/caregivers (to be described as "at-home caregivers") provided demographic information and reported about the functioning of the adolescents. Because this is a study of communication between adolescents and their deployed parents, we also describe the demographic characteristics of the deployed parents, as reported by the at-home caregivers.

The deployed parents were not included as participants in this study. Our primary point of contact was the at-home caregiver who recruited for us the deployed parents and the adolescents. Consequently, all adolescent participants who filled in a survey could be matched with a at-home caregiver who filled in a survey, but only 40 of the 75 adolescents could be matched with a deployed parent who filled in a survey. In addition, the deployed parent survey did not include questions about the functioning of the adolescents, which precluded the analysis of their data in this study.

The communicating dyads: Adolescents and their deployed parents

Of the adolescents who completed a survey, 57.3% were male and 42.7% were female. Their ages ranged between 11 and 18 years, but most were between 11 and 14 years old. Their average age was 13.2 years ($SD = 1.9$).

The at-home caregivers were asked to provide demographic information about the deployed parent. The average age of the 75 deployed parents was 38.8 years ($SD = 5.2$). Of the 72 deployed parents for whom we had gender information, 69 were male. Ninety percent of the 73 deployed parents for whom we had information about their ethnicity were Caucasian. Of the 75 deployed parents, 93.3% were in active duty and the rest were in the reserves. The majority (56%) held senior enlisted, E5-E9 rank. Another 24% held field grade officer, O4-O6 rank. Sixteen (21.3%) were in combat deployment, 36 (48%) were in combat-related/combat support positions, 19 (25.3%) were away from home in positions not related to combat, and four (5.3%) were away from home for training. Of 71 deployed parents for whom we had information, 22.5% served in the Air Force, 49.3% were in the Army, 4.2% were Marines, and 23.9% were in the Navy.

The adolescents had experienced an average of 4.6 parental deployments ($SD = 2.9$). The average number of months the deployed parent was away from the family during the most recent deployment was 4.6 ($SD = 3.1$).

The at-home caregivers

Of the 75 at-home caregivers, four were male. The average age of the at-home caregivers was 37.9 ($SD = 4.7$).

Of the 73 at-home caregivers who reported their ethnicity, 93% were Caucasian. As for education, 6.7% of the at-home caregivers had a high school diploma or equivalent, 12% completed vocational or trade school, 18.7% had some college, 13.3% had an associate degree, 37.3% had a bachelor degree, 14.7% had a master's degree, and 4% had a professional or doctoral degree. The average years of education of the at-home caregivers was 15.2 years ($SD = 2.1$).

Procedures

Data collection occurred between September 2013 and April 2014, following IRB approval. At-home caregivers responded to announcements about the study that appeared on the website, Facebook, and Twitter locations of Blue Star Families, the National Military Family Association, the Military Child Education Coalition, and Zero to Three—organizations that provide information of interest to military-connected parents, families and children. Some were directed to us by the Relationships among Military Personnel project at the University of Colorado-Denver. Others learned about the study from family and friends.

The announcements sought respondents who were the primary at-home caregivers of children whose military parent was at that time deployed or away from home for training or another assignment. The at-home caregivers completed a survey that asked for information about family demographics, the distance communication between children ages 1–18 and their deployed parents, and about the functioning of the children. The at-home caregivers were asked for the e-mail address of the adolescent child aged 11–18 whose name came first in the alphabet, if they cared for any adolescents of that age and if they agreed to their adolescent's participation in the study. Adolescents who were eligible to participate and who were interested in participating gave their consent by completing a survey. The at-home caregivers and the adolescents who completed the survey received a gift card as a token of appreciation.

Measures

Child demographics

The adolescents reported their age and gender. These measures were included as control variables based on the literature showing associations between these variables and children's and adolescents' functioning. For example, Wilson et al. (2014) found that younger adolescents (11–14 years of age) have higher scores on problem behaviors (e.g., internalizing, externalizing) and lower scores on prosocial behaviors than older

adolescents (15–17 year olds). Reed et al. (2011) found both age and gender differences in their research of the psychological status of adolescents of deployed parents.

At-home caregiver stress

At-home caregivers reported their average level of stress and inability to cope in the past month in response to the Perceived Stress Scale (Cohen, Kamarack, & Mermelstein, 1983). The total score was the average of responses to the 14 questions, after reversing the scores on several items so that a high score reflects high stress. An example of questions includes how often the at-home caregiver has been upset because something happened unexpectedly. Other questions ask how often he or she felt nervous and "stressed" and how often he or she dealt successfully with irritating life hassles. Response options were *never* (1), *almost never* (2), *sometimes* (3), *fairly often* (4), and *very often* (5). Cronbach's alpha for our sample was .85 ($N = 73$). We considered the at-home caregiver stress a control variable, expecting it to predict poor adolescents' functioning. The literature shows that deployment-related stress in the parent is associated with stress in their adolescents (Lester et al., 2010; Mmari et al., 2009), and stress is known to impact functioning negatively (McEwen, 2012). Also, Milburn and Lightfoot (2013), among others, have argued that the effect of deployment on adolescents' functioning is indirect through the impact of stress in the family on the children.

Quantity and quality of distance communication

The adolescents' responses to the survey provided the information about distance communication between themselves and the deployed parent. The survey questions pertaining to characteristics of communication were developed for this study. We report on two orthogonal adolescent-reported measures of quantity of communication across all types of communication: frequency of communication and average duration of an instance of communication. We also report on two orthogonal adolescent-reported measures of quality of communication when the parents talked to the adolescents: positive communication and controlling communication. The specific questions we asked about distance communication are provided in the Appendix.

Frequency of communication. This measure is the average number of times per week (over a period of two weeks) the adolescent communicated with the deployed parent across 10 different methods of communication including phone, email, social media, text messaging,

tweeting, video chatting, exchanging photos electronically, and sending surface or airmail. Examples of specific questions are, “How often have you been talking on the phone (or on the computer but with sound or audio only)?”; “How often have you been sending each other emails?”; and “How often have you been sending each other messages on Facebook or another social network like Facebook?” Response options were, *Not at all, less than once a week, once a week, three or so times a week, about once a day, and more than once a day*. Responses were re-coded as 0, 0.5, 1, 3, 7, and 14, respectively, to approximate the number of times per week using each method. The ten item scores were summed to yield a total frequency of communication per week score whose values could range from 0 to 140.

Average duration of communication. This second measure of quantity of communication consists of the number of hours per week the adolescents and the deployed parents communicated, divided by the frequency or number of communications—i.e., the average duration of an instance of communication. The survey asked the adolescent: “Now, think about all your communicating with your deployed parent in a week. How much time all together do you think you usually spend communicating with your deployed parent in a week? No time at all (coded as 0 hours per week), just a few minutes (coded as .2 of an hour), about half an hour (coded as .5 of an hour), about an hour (coded as one hour), about two or three hours (coded as 2.5 hours), about four or five hours (coded as 4.5 hours), and more than five hours: About how many hours? (coded as 8 hours).” The Spearman Rho correlation between the two measures of the quantity of communication was $r_s = -0.01$, showing that the two measures were independent.

Positive communication when the parent talked with the child. This first measure of the quality of communication assesses supportive and open communication by the deployed parent in interaction with the adolescent (including encouragement of communication, support, and the expression of positive emotions). Examples of items are, “How often did your parent ask you about what was happening in school?”; “How often did your parent tell you he/she was safe and everything was OK over there?”; and “How often did your parent tell you he/she can’t wait to see you again?” Response options were, (*Almost never = 1, Just sometimes = 2, Most of the time = 3, or Almost always = 4*).

The total score, which could range from 14 to 56, is the sum score of 14 items that loaded at .500 or higher on Factor 1 in a factor analysis conducted in order to

make sure that the positive communication and controlling communication measures were orthogonal. We entered into a factor analysis with varimax rotation and Kaiser normalization the responses to all the survey questions about the quality of the deployed parents’ communication with the adolescents when they talked. The analysis showed two main factors that could be described as supportive communication and controlling communication and additional factors with low item loading that were hard to describe. Since, from a conceptual perspective, we were interested in supportive and controlling communication, we re-ran the factor analysis and specified that we were looking for two factors before selecting the highest loading items for each scale. Cronbach’s alpha for Positive Communication was $=.90$ ($N = 70$).

Controlling communication when the parent talked to the child. This second measure of quality of communication assesses attempts by the deployed parent to regulate from afar the behavior of the adolescent. It is the sum score of items that loaded at .500 or higher on Factor 2 in the above described factor analysis. The measure includes responses to four survey questions, such as “How often did your parent tell you that you need to stop being upset about things?” “How often did your parent tell you that you need to try harder or do better at something?” and “How often did your parent tell you to be nicer to someone?” Possible responses were: (*Almost never = 1; Just sometimes = 2; Most of the time = 3 or Almost always = 4*). The lowest possible score was 4 and the highest possible score was 16. Cronbach’s alpha for this variable was $.64$ ($n = 72$). The Spearman rho correlation between the controlling communication variable and the supportive communication variable was $r_s = -0.14$ ($ns; N = 72$), showing that the two measures were independent.

Adolescents’ functioning

The informants for this study, the adolescents and their at-home caregivers, independently responded to questions about the adolescents’ functioning. We assessed the adolescents’ emotional state immediately following instances of communication with their deployed parents, their health-related quality of life, and, based on the at-home caregivers’ reports, their externalizing and internalizing behavior problems.

Emotions felt immediately following talking to the deployed parent. We developed questions tapping the positive and negative emotions felt by the adolescents immediately after they talked to their deployed parents. Positive emotions after communicating were expected

to index the pleasure associated with (a) the opportunity to communicate with the deployed parent and/or (b) the quality of the communication, as perceived by the adolescent. Negative emotions were expected to index (a) a sense of loss over the separation and/or (b) the perceived quality of the communication. The adolescents and the at-home caregiver responded to the questions. The scores obtained from the adolescents and their at-home caregivers were not normally distributed and were therefore categorized into four quartiles for the purpose of analysis.

Scores on the Positive Emotions scale as reported by the adolescents were the average of responses to two questions on the survey. The first question was, "After you talked to your deployed parent, how happy did you usually feel?" The second question was, "After you talked to your deployed parent, how much better did you usually feel?" Response options were *not at all*, *a little*, *somewhat*, or *very*, and scores were between 1 and 4, respectively. Cronbach's alpha was .66 ($N = 74$). We used this measure of reliability for a two-item instrument based on Eising, Grotenhuis, and Pelzer (2013).

Scores on the Negative Emotions as reported by the adolescents were the average of responses to three questions on the survey. Responses were on the same scale of 1 to 4 described above, with 4 indicating high negative emotions. The questions pertained to how worried, sad or mad the child felt after talking to the deployed parent. Cronbach's alpha was .70 ($N = 73$).

The at-home caregivers completed the same two sets of items to describe their observations of the adolescents' positive and negative emotions following communication. The Positive Emotions scale as reported by the at-home caregiver had a Cronbach's alpha of .66 ($N = 62$); the Negative Emotions scale had a Cronbach's alpha of .70 ($N = 57$).

Health-related quality of life (HRQoL). HRQoL is a multi-dimensional concept that includes domains related to physical, mental, emotional, and social functioning. To assess these aspects of the adolescents' functioning, we used the KIDSCREEN-10 Index (KIDSCREEN Group Europe, 2006; Rajmil et al., 2014; Ravens-Sieberer et al., 2014), which is reported to provide good discriminatory power along the HRQoL-trait-continuum, has good internal consistency reliability (Cronbach's alpha = .82), and good test-retest reliability/stability ($r = .73$; ICC = .72). The validity of the scale was supported by studies showing that children and adolescents with a low score on the family affluence scale (FAS, effect size $d = .47$), with behavioral problems (SDQ, effect size $d = 1.30$), and with a high number of psychosomatic complaints ($d = 1.69$) display

significantly lower health-related quality of life as measured by the KIDSCREEN-10 Index in comparison to the respective comparison group. Example questions were, "Have you felt fit and well? Have you felt full of energy? Have you felt lonely? Have you had fun with your friends?" In our study, responses by the adolescents were coded on a 5-point scale (*never*, *seldom*, *quite often*, *very often*, and *always*). The responses to two questions about feeling sad and lonely were reversed. As recommended, Rasch scoring with a mean of 50 and SD of 10 was used to calculate a total score. Cronbach's alpha for this measure was .83 ($N = 72$). The questions presented to the at-home caregivers were parallel to the ones presented to the adolescents. Total scores were computed in the same way. Cronbach's alpha for this measure was .82 ($N = 73$). In our study, the scores on the KIDSCREEN-10 were normally distributed.

Behavior problems. Only the at-home caregivers rated child behavior problems on a reduced set of Child Behavior Checklist (CBCL) (Achenbach, 1991) items recommended by Guttmanova, Szanyi, and Cali (2007) and derived from a CBCL form for children and adolescents aged 4–18. Ten questions pertained to the frequency with which the adolescent displayed behavioral problems reflecting *externalizing problems*. Example questions were, "The selected child has sudden changes in moods or feelings," "The selected child bullies, or is cruel or mean to others," and "The selected child is disobedient at home." Cronbach's alpha was .86 ($n = 72$). Seven questions pertained to the frequency with which the adolescent displayed behavioral problems like depression and anxiety reflecting *internalizing problems*. Example questions were, "The selected child is rather high-strung, tense, or nervous," "The selected child is too fearful or anxious," and "The selected child feels worthless or inferior." Cronbach's alpha was .84 ($N = 70$). Response options for both scales were *not true* (1), *sometimes true* (2), and *often true* (3). The total score for each scale was the average of the relevant items. In our study, the internalizing and externalizing behavior problems scores were not normally distributed and were categorized into four quartiles for the purpose of analysis.

Results

Analyses

To answer our research questions, we first examined the psychometrics of four communication measures: frequency, average duration, positive communication,

and controlling communication. We then examined the association between distance communication and adolescents' functioning. To do that, we ran bivariate correlations and regression models. In Table 1 we provide descriptive statistics for all the measures used in this study.

Considering that most variables were nonnormally distributed, we used Spearman's rank-order correlations. Linear regression models were used for both adolescents' and at-home caregivers' reports on health related quality of life (KIDSCREEN –10) since this dependent variable was normally distributed. For the remaining adolescent functioning dependent variables, we used SPSS to determine quartile-based categories and subsequently used ordered logistic regressions due to the ordinal nature of the quartile-based categorizations.

We regressed each of the adolescent functioning variables on the quantity and quality communication variables, including in the models the control variables described and justified earlier: adolescents' age and gender and the at-home caregiver self-reported stress. When data from both informants were available, we ran parallel regression analyses with the adolescent-reported and the at-home caregiver-reported adolescents' functioning data. Only the at-home caregivers provided the data about adolescents' externalizing and internalizing problem behaviors so parallel analyses were not feasible.

Missing data represented less than 5% of the data set. There were 50 cases with no missing data and 25 cases with at least one variable missing. At-home caregivers' reports on adolescents' negative and positive emotions after communication had the largest percentage of missing data (16% and 9.3%, respectively). To avoid bias due to list-wise deletion of cases with missing data, we used multiple imputations. Five multiply imputed data sets were created using the fully conditional specification

algorithm in SAS PROC MI. All analyses were conducted using SAS 9.3.

Findings

The findings we report are based on the descriptive statistics in Table 1 and on the ordered regression models presented in Tables 2 and 3.

Quantity and quality of distance communication

In the following section, we elaborate on characteristics of distance communication with the aim of answering our research questions described at the end of the Introduction.

Quantity

On average, adolescents communicated with their deployed parents 10.14 times per week, with an average duration of instances of communication lasting 9.6 minutes. As can be seen in Table 1, there was great variability in how frequently and for how long the deployed parents and their adolescents communicated. Some communication instances were very brief, barely allowing for more than just touching base, and others being sufficient for a lengthy conversation.

Quality

The mean score of Positive Communication reported by the adolescents was 42.90. Divided by the 14 items, this translates into a response of *almost always*. However, as can be seen in Table 1, the range of the degree of positive communication was high. The mean score of Controlling Communication was 7.85. Divided by the four items, it is equal to a response of *just sometimes*—a moderate level associated with some variability.

Table 1. Descriptive statistics for stress, communication, and functioning measures.

Variable	Valid <i>n</i>	<i>M</i>	<i>SD</i>	Median	Min	Max	Skewness	Kurtosis	α
At-home caregiver stress	75	2.73	0.55	2.64	1.57	4.07	0.31	−0.16	.85
Distance communication									
Frequency (number/week)	74	10.14	9.22	7.25	.50	57.00	2.56	9.08	–
Average duration of an instance (hr.)	74	0.16	0.13	.10	.00	.71	1.97	4.26	–
Positive communication	70	42.90	8.55	43.00	17.00	56.00	−0.70	1.01	.90
Controlling communication	72	7.85	2.49	8.00	4.00	12.00	−0.15	−1.21	.64
Adolescents' Functioning									
Emotions felt after communication									
Positive emotion (adolescents)	74	3.25	0.72	3.50	1.00	4.00	−0.77	0.08	.66
Positive emotion (caregivers)	68	3.27	0.69	3.50	1.00	4.00	−1.03	0.90	.66
Negative emotion (adolescents)	74	1.65	0.63	1.50	1.00	3.67	1.23	1.62	.70
Negative emotion (caregivers)	63	1.79	0.66	1.67	1.00	3.33	0.63	−0.69	.70
Health-Related Quality of Life									
Reported by adolescent	72	49.84	9.42	48.29	33.79	72.49	0.73	0.22	.83
Reported by at-home caregiver	73	49.83	10.68	48.58	27.32	76.31	0.47	0.08	.82
Behavior problems									
Externalizing problems	73	1.35	0.36	1.30	1.00	2.50	1.59	2.71	.86
Internalizing problems	73	1.27	0.38	1.14	1.00	2.57	1.81	3.36	.84

Table 2. Correlation and ordered logistic regression analyses predicting adolescents' emotions felt following synchronous distance communication from characteristics of the distance communication and from control variables of adolescent age, adolescent gender, and at-home caregiver stress.

Variable	Positive emotions				Negative emotions			
	Reported by adolescent		Reported by at-home caregiver		Reported by adolescent		Reported by at-home caregiver	
	r_s	B	r_s	B	r_s	B	r_s	B
Adolescent age	-.20	-.14	-.13	-.25*	.07	.06	-.08	-.10
Adolescent gender ^a	-.15	-.41	-.02	.75	.04	.05	-.16	-1.59***
At-home caregiver stress	-.20	-.42	-.37**	-1.60***	.20	.79	.34**	1.98***
Comm. frequency	.09	.05	.26*	-.01	-.01	.00	-.13	-.01
Comm. av. Duration	.21	1.27	.04	1.08	.08	-1.98	-.08	-.88
Positive communication	.36**	.10***	.14	.01	.25*	.07*	.13	.03
Controlling communication	-.12	-.16	.18	.23*	.23	.19	-.13	-.07

^aCoded Male = 0, Female = 1. r_s = Spearman rho. B = Unstandardized coefficients.

* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

Associations between distance communication and adolescents' functioning

We next turn to answering our questions pertaining to the associations between distance communication characteristics and adolescent functioning. The unstandardized coefficient estimates in Tables 2 and 3 provide information about the relations between specific distance communication and specific child functioning variables after controlling for all other variables in the model.

While the quantity of communication was not associated with adolescent functioning, the quality of the communication was. More positive communication was associated with more adolescent-reported positive and negative emotions following communication ($B = .10$, $p = .001$; $B = .07$, $p = .02$) and with greater health-related quality of life as measured by KIDSCREEN and as reported by the adolescents and the at-home caregivers ($B = .30$, $p = .01$; $B = .62$, $p < .001$, respectively). Positive communication was also associated with fewer at-home caregiver-reported adolescents internalizing problems ($B = -.10$, $p = .01$). More controlling communication was associated with more at-home caregiver-reported adolescent positive

emotions following communication ($B = .23$, $p = .02$). More controlling communication was also associated with lower levels of adolescent-reported health-related quality of life ($B = -1.18$, $p = .01$).

Follow-up analyses

We conducted follow-up analyses regarding the associations between distance communication and adolescents' functioning. The first set of ordered regression analyses pertained to the 69 families where the deployed parent was known to be a father. (There were three families for whom we did not know the gender of the deployed parent.) Ordered regression analyses revealed the same findings as the regression analyses based on the full sample.

The second set of ordered regression analyses pertained to the 48 at-home caregivers who, according to their adolescents' reports, were present when the adolescents communicated with the deployed parents. We wanted to find out if reports of these at-home caregivers about the adolescents' emotions following communication led to similar findings to the ones we found based on the total sample. The analyses revealed that

Table 3. Correlation and ordered logistic regression analyses predicting adolescents' health-related quality of life and behavior problems from characteristics of distance communication and control variables of adolescent age, adolescent gender, and at-home caregiver stress.

Variable	Health related quality of life				Externalizing problems		Internalizing problems	
	Reported by adolescent		Reported by at-home caregiver		Reported by at-home caregiver		Reported by at-home caregiver	
	r_s	B	r_s	B	r_s	B	r_s	B
Adolescent age	-.12	-0.53	.26*	1.38**	-.22	-.17	-.20	-.15
Adolescent gender ^a	-.11	.34	.13	4.66*	.04	-.69	-.11	-1.55**
At-home caregiver stress	-.29*	-4.95**	-.29*	-5.50**	.52***	2.47***	.35**	1.80**
Comm. frequency	.06	.15	.01	-.02	-.04	-.01	-.21	-.02
Comm. av. Duration	.09	13.03	-.06	-2.10	.03	1.73	-.11	-3.82
Positive communication	.31**	.30**	.45***	.62***	-.19	-.06	-.31*	-.10**
Controlling communication	-.41***	-1.18**	-.23	-.40	.12	.06	-.01	-.01

^aCoded Male = 0, Female = 1. r_s = Spearman rho. B = Unstandardized coefficients.

* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

controlling communication was linked to adolescents' positive emotions following communication with the deployed parents ($B = .43, p = .002$). This result is similar to that for the total sample, but the coefficient estimate B is larger.

Discussion

Our first research goal was to describe the extent to which adolescents and their deployed parents engage in distance communication and the quality of their communication. In this study, quantity of communication pertained to all forms of communication and quality of communication pertained to communication when the adolescents and their deployed parents talked. We found wide variations in the frequency, average length, and quality of such distance communication between adolescents and their deployed parents. Some individual differences in the *quantity* of distance communication, especially communication by phone or video chats, may be linked to objective factors such as large time zone differences, lack of privacy, or lack of access to technology at the deployed parents' end (Ender, 1995; MacDermid et al., 2005; Owlett et al., 2015). But the differences in the *quantity* of communication, including phone, video chats, email, tweets, Facebook messages, regular mail, or packages, may also be associated with families' styles of communication (Rudi, Walkner & Dworkin, 2015). Families are known to vary in terms of the extent to which they communicate when they are co-located and this may carry over to when they are apart. Family communication patterns theory (Koerner & Schrodtt, 2014) describes two dimensions of family communication, conversation orientation and conformity orientation. The first dimension is relevant to our finding since it is defined by the degree to which families create a communication environment in which all family members are encouraged to participate in unrestrained interaction about a wide range of topics. While it is not known to what extent communication patterns while families live in the same space generalize to communication when they are not co-located, this is certainly a topic worth examining in future theory-guided research.

Variations in the *quality* of distance communication may also reflect differences among families in their characteristic communication styles as well as differences in the quality of parent-adolescent relationships. In addition, variations in the *quality* of distance communication may partially reflect the conflicting suggestions that military families receive about communication during deployment. On the one hand, they are advised to communicate openly and truthfully

(Drummet, Coleman, & Cable, 2003; National Military Family Association, 2013). But at the same time, there may be restrictions on what service members can say (Owlett et al., 2015).

Our second research goal was to describe the extent to which the quantity and quality of distance communication are associated with the adolescents' functioning. Although parent-adolescent communication is generally regarded as a contributor to healthy adolescent development (Laursen & Collins, 2004), Tolhurst (2013), in a study of communication between military spouses, and Wong et al. (2010), in a study of deployed parents' communication with their adolescents, both found that very frequent communication is associated with poorer functioning of one of the participants. Our regression analyses did not replicate these findings; rather, like Jaycox et al. (2016) who surveyed 552 adolescents about the extent of their communication with their deployed parent, we found that the quantity of communications between deployed parents and their adolescents is not linked to adolescents' functioning. This suggests that the links between quantity of parent-child communication and adolescent adjustment during deployments deserves further investigation; for example, there may be a curvilinear association in which either too little or too much communication is maladaptive (Tolhurst, 2013) or quantity and quality of communication may interact. Discovering such relationships among variables will require a sample bigger than the one available to us.

Meanwhile, the present findings establish that more positive distance communication is linked to better adolescent functioning. Since the sample we studied is neither large nor representative of military families with adolescents (U.S. Department of Defense, 2013), these findings require replication. If the findings are validated, it would be important to identify the family conditions that promote positive distance communication and restrict controlling distance communication. We also expect that families' concepts about face-to-face communication would predict their distance communication practices and, indirectly, their links to adolescents' functioning. While this possibility needs to be examined with new theory-driven research, the findings of Ledbetter (2010) suggest that distance communication may be an extension of families' face-to-face communication patterns. He found that family communication practices when family members are geographically co-present are linked to young adults' attitudes regarding interpersonal online communication.

Our data further suggest that adolescents may be in a better position than their at-home caregivers to report on their distance communication and functioning. Even

though the at-home caregivers' and adolescents' reported data provided similar findings pertaining to health-related quality of life, the adolescents' and at-home caregivers' data yielded different results for some other aspects of functioning. Only the adolescents' data revealed a link between positive communication and adolescents' emotions following communication. Also, only the adolescents' data suggested that controlling communication is associated with lower scores on the health-related quality of life measure. The results about controlling communication are consistent with the literature about the association between highly controlling parent-child relationships and child and adolescent outcomes (McFarlane, Bellissimo, & Norman, 1995; Radziszewska, Richardson, Dent, & Flay, 1996; Shucksmith, Hendry, & Glendinning, 1995), and reinforce the value of adolescents' reports.

Willerton et al. (2011) reported that 71 military fathers participating in a focus group expressed significant challenge in parenting adolescents, particularly during deployment. Despite these self-reported difficulties, our research shows that the quality, although not the quantity, of deployed parents' and adolescents' communication is linked to adolescent functioning as reported by the adolescents and their at-home caregivers. Moreover, the findings show that our measures of positive and controlling communication, reflective of the affiliation and dominance dimensions of human communication discussed by Dillard et al. (1999), proved as expected to be independent dimensions with different implications for adolescent functioning. It would be interesting to find out if the perspective of deployed parents yields similar findings.

The study has several unique strengths. We provide information about both the quality and quantity of distance communication between deployed parents and their adolescents. The information about the communication is provided by the adolescents. The information about the adolescent functioning is provided both by the adolescents and by their at-home caregivers.

However, the study also has limitations. It is important to note that our study is based on a small and non-representative sample of volunteers and that some of our measures, necessarily short given the constraints of online surveys, had low reliability. In addition, adolescents' reports of communication over a two-week period may have been strongly influenced by their most recent communications, and it would be informative to gather data based on narrower time frames. Our analyses do not allow us to conclude that the quality of distance communication influences adolescents' functioning when adolescent functioning could also influence quality of communication.

In line with research on modifying parent-young child attachment by changing parents' behaviors (Moss et al., 2011), we hope that future research on distance communication in the military context will focus on interventions to modify the communication behaviors of deployed parents and their children with the aim of improving the children's functioning during parental deployment. If such interventions are found to be efficacious, we will have evidence that distance communication is not only associated with but also affects adolescents' functioning. Such findings may also help refine theories of family communication, revealing the extent to which distance communication operates like face-to-face communication between co-present family members. It might also be relevant to understanding the effects of distance communication occurring in other family contexts such as when grandparents live far away from their grandchildren, when divorced parents live at a geographical distance, and when parents are incarcerated.

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Appendix

Adolescent survey questions about distance communication

I. Questions about the Quantity of Communication

The questions below were prefaced by the following text: Here are lots of ways of keeping in touch with a deployed parent. Some of these things you may never have done, some you may have done a lot. Please think about any communications between you and your deployed mom or dad during the past two weeks. For each type of communication, how often have you used it in the past two weeks?

Each of the questions could be answered with one of the following answers:

Not at all; Less than once a week; Once a week; 3 or so times a week; About once a day; More than once a day.

i. Questions about Frequency.

1. How often have you been talking on the phone (or on the computer but with sound or audio only)?
2. How often have you been sending each other emails?
3. How often have you been sending each other messages on Facebook or another social network like Facebook?

4. How often have you been sending each other text messages?
5. How often have you been tweeting, or communicating using Twitter?
6. How often have you been video chatting—using Skype or FaceTime or something else where you and your parent could both see and hear each other while you talked?
7. How often have you been sending letters, cards, or packages in the mail to your deployed parent?
8. How often have you been getting letters, cards, or packages in the mail from your deployed parent?
9. How often have you been sharing pictures or videos with your deployed parent?
10. How often have you been getting pictures or videos shared with you by your deployed parent?

ii. **A Question about Duration**

1. How much time all together do you think you usually spend communicating with your deployed parent in a week?

II. **Questions about the Quality of Communication**

The following statements were subsumed under the topic “Your Parent’s Talk with You” and preceded the questions below: Here are some things that some deployed parents do or say. We want to know which ones your deployed parent has done or not done. Think about the past two weeks. In the last two weeks, when you communicated...

Following each question, the adolescents selected one of four responses: *Almost never*; *Just sometimes*; *Most of the time*; *Almost always*.

i. **Questions about Positive Communication**

1. How often did your parent ask you about what was happening at school?
2. How often did your parent listen carefully to something you wanted to tell him or her?

3. How often did your parent ask you about things you were doing after school or on the weekend?
 4. How often did your parent ask how you were feeling?
 5. In the last two weeks, how often did your parent tell you that you can talk to him or her if something is bothering you?
 6. How often did your parent listen carefully when you needed help with something?
 7. How often did your parent say he/she loved you?
 8. How often did your parent praise you or tell you that you did a good job?
 9. In the last two weeks, how often did your parent help you figure out what to do about something, or solve a problem you were having?
 10. How often did your parent tell you he/she was safe and everything was OK over there?
 11. How often did your parent tell you he/she missed you?
 12. How often did your parent tell you he/she can’t wait to see you again?
 13. How often did your parent tell funny stories or jokes to make you laugh?
 14. How often did your parent talk about what you’ll do when he/she is back home?
- ii. **Questions about Controlling Communication**
1. How often did your parent tell you that you need to stop being upset about things?
 2. How often did your parent tell you that you need to try harder or do better at something?
 3. In the last two weeks, how often did your parent tell you that you need to work more on your schoolwork?
 4. How often did your parent tell you to be nicer to someone?