
Unmitigated Communion and Health Among Adolescents With and Without Diabetes: The Mediating Role of Eating Disturbances

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The authors examined the implications of unmitigated communion—a focus on others to the exclusion of the self—for psychological and physical health among adolescents with ($n = 132$) and without ($n = 131$) diabetes times 1 during a 1-year period. Unmitigated communion predicted greater psychological distress and lower levels of competence cross-sectionally and longitudinally, controlling for sex, pubertal status, and communion. Health status moderated some longitudinal relations, such that relations held only for adolescents with diabetes. In addition, unmitigated communion was associated with poor metabolic control and predicted a deterioration in metabolic control over the year for adolescents with diabetes. Unmitigated communion also was associated with disturbed eating behavior cross-sectionally and longitudinally, and disturbed eating behavior explained some of the relations of unmitigated communion to psychological but not physical health outcomes.

Keywords: *unmitigated communion; adolescence; diabetes; disturbed eating behavior*

Unmitigated communion is defined as a focus on others to the exclusion of the self (Helgeson, 1994; Helgeson & Fritz, 1998; Spence, Helmreich, & Holahan,

1979). It has been linked to psychological distress and poor health behavior among a variety of populations, mostly adults. Rarely has unmitigated communion been studied among children or adolescents. The goal of this article is to study unmitigated communion among a group of adolescents for whom it may pose health hazards—adolescents with diabetes. Because adolescents with diabetes need to pay close attention to themselves to care for their illness, those who have a focus that is directed outward may suffer. We also examine a mechanism by which unmitigated communion may be linked to

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poor health outcomes in this population, disturbed eating behavior.

First, we review the construct of unmitigated communion, its implications for health, and its potential role in diabetes. Then, we discuss disturbed eating behavior in the context of diabetes. Finally, we describe the potential for disturbed eating behavior to mediate the links of unmitigated communion to health outcomes.

UNMITIGATED COMMUNION

There are two facets of unmitigated communion—an overinvolvement with others and a neglect of the self (Fritz & Helgeson, 1998; Helgeson & Fritz, 1998). Unmitigated communion is associated with a set of interpersonal difficulties that reflect overinvolvement with others, such as being intrusive, overly nurturant, overprotective, and establishing relationships by putting others' needs before one's own (Fritz & Helgeson, 1998; Helgeson & Fritz, 1999). Unmitigated communion also is associated with being more adversely affected by interpersonal conflict (Reynolds et al., 2006) and with rumination about others' problems (Fritz & Helgeson, 1998).

Self-neglect has been directly tied to unmitigated communion in the form of links to poor health behavior. In studies of people with chronic illness, unmitigated communion has been directly related to a range of poor health behaviors as well as noncompliance with physician instructions (see Helgeson & Fritz, 2000, for a review; Helgeson, 2003). Unmitigated communion also is associated with a constellation of interpersonal problems that reflect self-neglect, such as difficulties asserting one's needs, being exploitable, inhibiting self-expression to avoid conflict with others, difficulties with self-disclosure, self-effacement, and self-subjugation (Buss, 1990; Fritz & Helgeson, 1998; Helgeson & Fritz, 1999).

One basis for all of these interpersonal difficulties may be low self-esteem. Unmitigated communion is correlated with low self-esteem (Fritz & Helgeson, 1998; Helgeson & Fritz, 1998; Helgeson, 2003), and low self-esteem may be a motivating factor to become overly involved with others. That is, taking care of others may be a source of self-esteem for unmitigated communion individuals. Unmitigated communion is associated with an externalized self-perception, meaning that self-worth is dependent on others' views of the self (Fritz & Helgeson, 1998). Unmitigated communion also is related to the belief that others view the self negatively (Fritz & Helgeson, 1998). The combination of the two—an externalized self-perception and the perception that others hold negative views of the self—seems to explain the relation of unmitigated communion to low self-esteem (Fritz & Helgeson, 1998).

Given the interpersonal difficulties associated with unmitigated communion, it is not surprising that unmitigated communion has been associated with psychological distress among a wide variety of populations, including college students (Bruch, 2002; Fritz & Helgeson, 1998), healthy adults (Fritz & Helgeson, 1998; Willard, 1996), women with breast cancer (Helgeson, 2003; Piro, Zeldow, Knight, Mytko, & Gradishar, 2001), women with rheumatoid arthritis (Trudeau, Danoff-Burg, & Revenson, 2003), adults with heart disease (Fritz, 2000; Helgeson, 1993; Helgeson & Fritz, 1999), and healthy adolescents (Craighead & Green, 1989; Fritz & Helgeson, 1998).

In only one study has unmitigated communion been examined in the context of diabetes. In a study of 43 adolescents with type 1 diabetes, those who scored high on unmitigated communion reported more depressive symptoms and showed an increase in depressive symptoms over 4 months (Helgeson & Fritz, 1996). High unmitigated communion adolescents also had worse metabolic control (i.e., poor blood glucose levels) and showed a decline in metabolic control over time. Relationship stressors explained the connections of unmitigated communion to psychological distress and metabolic control. That is, adolescents who scored high on unmitigated communion reported being more upset by stressful events that involved others, which predicted an increase in depressive symptoms and a decline in metabolic control.

The goal of this article is to further examine the relation of unmitigated communion to psychological and physical health by focusing on a group of adolescents who are vulnerable to health problems—adolescents with diabetes. There were two reasons that we chose to study unmitigated communion in the context of adolescents with diabetes. First, it seemed important to study the health consequences of a personality trait among a group of people for whom consequences of self-neglect and an excessive focus on others would appear. That is, it is difficult to observe health consequences of overinvolvement in others and self-neglect among a group of people who are presumably healthy and for whom behavior will not have health consequences for years, as is the case for healthy adolescents. Thus, we hypothesize that unmitigated communion will reveal stronger relations to health outcomes among adolescents with than without diabetes. Second, unmitigated communion has been referred to as a gender-related personality trait, because females score higher on it than males (see Helgeson & Fritz, 1999, for a review) or as a feature of the female gender role. Thus, it seemed important to study the health consequences of a gender-related trait at a time when gender roles become salient—early adolescence. Early adolescence has been referred to as a time of “gender intensification”—a time during which the norms for the male and female role become salient

and pressures intensify to adhere to those roles (Galambos, Almeida & Petersen, 1990; Hill & Lynch, 1983).

In addition to linking unmitigated communion to poor health outcomes among adolescents with diabetes, this study sought to expand on previous research by identifying a psychological mechanism that has not been examined by previous research and a mechanism that might pose serious health hazards for adolescents with diabetes—disturbed eating behavior. We investigated the extent to which disturbed eating behavior explained or mediated the links of unmitigated communion to poor health. Below, we examine the extent to which diabetes is associated with disturbed eating behavior among adolescents. Then, we explore the potential for a connection between unmitigated communion and disturbed eating behavior among adolescents with and without diabetes.

DISTURBED EATING BEHAVIOR AMONG ADOLESCENTS WITH DIABETES

Disturbed eating behavior is an important concern for adolescents with diabetes. A review of the literature by Marcus and Wing (1990) concluded that there are two reasons that adolescents with diabetes may be at increased risk for clinical eating disorders and disturbed eating behavior compared to healthy adolescents. First, the diabetes regimen requires the restriction of certain foods and the avoidance of foods high in sugar. This sets in motion a pattern of dietary restraint. Second, the illness has the potential to be associated with a negative body image, because intensive insulin therapy has been associated with weight gain (Diabetes Control and Complications Trial [DCCT] Research Group, 1988). Adolescents with diabetes may purposely skip insulin injections or reduce their levels of insulin to lose weight (Rubin & Peyrot, 1992).

The most recent literature review in the field has concluded that both clinical and subclinical eating disorders are more common among adolescents with type 1 diabetes compared to healthy peers (Rodin et al., 2002). In addition to having a higher level of eating pathology, the same level of problematic behavior poses greater risks for adolescents with diabetes than for healthy adolescents (Daneman, Olmsted, Rydall, Maharaj, & Rodin, 1998). That is, both eating disorders and disordered eating behavior (bingeing, insulin omissions) are associated with poor metabolic control, diabetes-related hospitalizations, and diabetes complications (Jones, Lawson, Daneman, Olmstead, & Rodin, 2000; Marcus & Wing, 1990; Pollock, Kovacs, & Charron-Prochownik, 1995; Rydall, Rodin, Olmsted, Devenyi, & Daneman, 1997).

RELATION OF UNMITIGATED COMMUNION TO DISTURBED EATING BEHAVIOR

Given the large sex difference in eating disorders and disturbed eating behavior, it is not surprising that researchers have turned to the gender role literature to explain these differences. Gender roles could be implicated in eating disorders because eating disturbances emerge during adolescence at the same time that gender roles become salient. One norm for the female gender role that becomes salient during adolescence is to be thin.

Gender roles have been linked to eating disturbances. In a meta-analytic review of the literature, Murnen and Smolak (1997) found a small positive relation between psychological femininity or communion (using the Bem Sex Role Inventory [BSRI; Bem, 1974] and the Personal Attributes Questionnaire [PAQ; Spence, Helmreich, & Stapp, 1974]) and eating problems across 23 independent samples ($d = .14$). The effect size was heterogeneous across the pool of studies, meaning that other variables are likely to influence the size of this relation. Interestingly, since this review was published, two recent studies have shown that the same femininity scales were either unrelated to disturbed eating behavior or related to lower levels of eating disturbances (Hepp, Spindler, & Milos, 2005; Williams & Ricciardelli, 2003).

One limitation of the research in this area, acknowledged by the authors of the meta-analysis, is that the PAQ and the BSRI femininity scales only measure the positive aspects of the female gender role. A focus on more negative characteristics might reveal a stronger relation to disturbed eating behavior. Martz, Handley, and Eisler (1995) focused on the negative aspects of the female role by examining the Feminine Gender Role Stress Scale (FGRS; Gillespie & Eisler, 1992). The FGRS identifies situations that women perceive as stressful because they threaten the female role, such as the fear of physical unattractiveness and the fear of behaving assertively. In their study, women hospitalized for eating disorders scored higher on the FGRS scale than women hospitalized for other psychiatric problems or healthy college women.

Thus, some of the inconsistency from prior research could be because of the failure to disentangle the more positive aspects of the female gender role, communion, from the more negative aspects of the female gender role, such as that captured by unmitigated communion. The construct of unmitigated communion was developed to identify socially undesirable characteristics that are socialized in women more than men (Spence et al., 1979). Although researchers have not linked unmitigated communion, per se, to eating disturbances, unmitigated communion has been linked to correlates of eating disturbances, such as low self-esteem and poor

body image (Fritz & Helgeson, 1998; Helgeson & Fritz, 1998; Helgeson, 2003). And eating disturbances have been linked to characteristics of unmitigated communion, such as overdependence on others for approval (Lakkis, Ricciardelli, & Williams, 1999; Paxton & Sculthorpe, 1991; Williams & Ricciardelli, 2003), externalized self-perception (Smolak & Munstertieger, 2002), and assertion difficulties in relationships (Martz et al., 1995).

To our knowledge, no previous studies have examined the relation of unmitigated communion to disturbed eating behavior. One reason that unmitigated communion might be connected to disturbed eating behavior is that unmitigated communion is linked to low self-esteem and a reliance on others for esteem. Thus, individuals who score high on unmitigated communion may be more vulnerable to societal pressures to be thin. In addition, it is likely that some of the overly other-focused behavior evidenced by unmitigated communion individuals is aimed at enhancing their self-image in the eyes of others. During adolescence, a favorable view by peers might be intimately tied to body image. The link of unmitigated communion to disturbed eating behavior might be especially strong for adolescents with diabetes because (a) they are at heightened risk for disturbed eating behavior and (b) they may be especially concerned with fitting in with peers because their illness distinguishes them from others.

GOALS OF THE PRESENT STUDY

There were three goals of the present study. First, we examined whether unmitigated communion was related to an array of health outcomes cross-sectionally and longitudinally over a 1-year period among early adolescents. We examined two groups of early adolescents, those with diabetes and an age-matched sample of healthy adolescents. This allowed us to examine whether the relation of unmitigated communion to psychological well-being was the same for the two groups. We predicted that unmitigated communion would be related to poor psychological well-being and physical health. We also predicted that these relations would be stronger among adolescents with than without diabetes. Second, we examined the relation of unmitigated communion to disturbed eating behavior, hypothesizing that unmitigated communion would be related to greater disturbances. Again, we predicted that these relations would be stronger for adolescents with than without diabetes. Our final goal was to examine whether disturbed eating behavior explained or mediated the relations of unmitigated communion to health outcomes. To the extent that unmitigated communion interacted with group (diabetes vs. healthy) to predict outcomes, we tested mediated moderation—that is, whether eating disturbances explained the unmitigated

communion by group interactions (see Muller, Judd, & Yzerbyt, 2005, for definition of mediated moderation).

Because communion (formerly referred to as “psychological femininity”) has been related to disturbed eating behavior in a variety of ways and is positively correlated with unmitigated communion, we included communion in all of our analyses so that we could establish the relations of unmitigated communion to outcomes independent of communion. Although unmitigated communion and communion are positively related, they often reveal divergent relations to well-being (see Fritz & Helgeson, 1998). We also statistically controlled for participant sex in all of our analyses so that we can determine the extent to which unmitigated communion is related to outcomes independent of sex. Previous research has shown that unmitigated communion predicts outcomes above and beyond sex (Helgeson & Fritz, 1996).

METHOD

Participants

Participants were 132 adolescents with diabetes (70 girls, 62 boys) and 131 healthy adolescents (67 girls, 64 boys). No more than 1 participant came from an individual family. Ages ranged from 10.70 to 14.21, with a mean of 12.08. The majority of participants were White (93% diabetes; 91% healthy). The four-factor Hollingshead index of social status (Hollingshead, 1975), which reflects the education and occupational status of mother and father, revealed that both groups of families reflected the lower end of technical workers, medium business, and minor professionals but the diabetes group had a lower social status ($M = 41.97$; $SD = 11.05$) than the healthy group ($M = 46.40$; $SD = 13.31$), $F(1, 261) = 8.66$, $p < .01$.¹ Adolescents with diabetes had the illness between 1 and 13 years, with an average of 4.91 ($SD = 2.98$) years.

Procedure

Diabetes. Adolescents with diabetes were recruited from the local Children’s Hospital. Letters ($n = 307$) of invitation were sent to all adolescents with type 1 diabetes who were approximately between the ages of 11 and 13. Families could return a postcard indicating that they did not want to be contacted by phone about the study. Twenty families returned these postcards, refusing contact about the study without our being able to determine eligibility. To be eligible, adolescents had to still be going to Children’s Hospital; had to be in fifth, sixth, or seventh grade; had to have type 1 diabetes for at least 1 year, because distress is likely to be greatest

during the first year after diagnosis; and could not have another major chronic illness (e.g., cancer, rheumatoid arthritis). Of 287 families, we reached 261 by phone and determined that 90 were not eligible. Of the 171 families determined to be eligible, 39 refused and 132 agreed. Thus, our effective response rate was 77%. For families who agreed, we set up an appointment to interview the child either immediately before or after the next diabetes clinic visit (Time 1 [T1]).

One year later, we successfully reached and interviewed 127 of the 132 children with diabetes (Time 2 [T2]). Of the 5 children whom we did not interview, 1 dropped out of the study, we were unable to reach/locate 2 children, and 2 children were having severe behavioral problems requiring hospitalization.

Healthy. Healthy adolescents were recruited from two sources. First, we set up tables at three area mall health fairs soliciting volunteers for the study. Interested parties completed a form that indicated the child's name and age and family phone number. Phone contacts were made to verify eligibility (i.e., fifth, sixth, or seventh grade; no major chronic illness), and in-person interviews were set up in the families' homes shortly thereafter. We recruited 70 families from mall health fairs. Second, a local pediatric network of physicians selected families from their database within our age range and sent them letters describing the study. Of the 156 letters sent, 33 people returned postcards refusing contact about the study without our being able to determine eligibility. Of the remaining 123 families, we reached 112 by phone and determined that 93 were eligible. Of those, 61 (66%) agreed to the study, and in-home interviews were set up.

One year later, we successfully reached and interviewed 129 healthy children. Of the 2 children we did not interview, 1 dropped out of the study, and 1 was experiencing severe family difficulties at the time.

The study was approved by the Institutional Review Boards of the institutions involved in the study. Informed consent was obtained in person at the T1 interview. All T1 and T2 interviews with children were conducted aloud in a private room. Because of the sensitive nature of the depressive symptoms and eating disturbance questionnaires, participants were provided with self-report forms so that they could complete those items privately rather than out loud.

Children were provided with response cards (i.e., 1 = *not at all*; 2 = *a little*; 3 = *a lot*) for standardized instruments. Parents completed a questionnaire in a separate room while children were being interviewed. The only information from the parent questionnaire relevant to this article is their report of demographic variables and child pubertal status.

Instruments

Background variables, pubertal status, unmitigated communion, and communion were measured at T1. All other variables were assessed at both T1 and T2.

Background. Demographic information, including participants' age, participants' race, household structure, parent education, and parent occupation, were included on the T1 parent questionnaire. Body mass index was computed from height and weight measured at the clinic for children with diabetes and by the interviewers at families' homes for healthy children. The four-factor Hollingshead index was used to measure social status (Hollingshead, 1975).

Pubertal status. At T1, parents completed the parent version of Carskadon and Acebo's (1993) self-report of pubertal status, which is based on Petersen, Crockett, Richards, and Boxer's (1988) Pubertal Development Scale. Carskadon and Acebo showed that parent ratings were strongly correlated with child ratings and with pediatrician ratings of pubertal status or Tanner stage of development. Responses to the 5 or 6 items (5 for boys; 6 for girls) are used to classify adolescents into one of the five Tanner stages. There were missing data on this measure for 4 healthy adolescents and 5 adolescents with diabetes because those parents did not complete that portion of the questionnaire. For the adolescents with diabetes, we substituted the physician rating of Tanner stage. Physician rating of Tanner stage was highly correlated with parent self-report, Spearman's $\rho = .71, p < .001$.

Unmitigated communion. Unmitigated communion was assessed with Helgeson's (1993; Fritz & Helgeson, 1998) 9-item measure. Respondents indicated the extent to which they agreed or disagreed with each item on a 5-point bipolar scale (sample items include "I always place the needs of others above my own," "I can't say no when someone asks me for help," and "I often worry about other people's problems"). Previous research has shown that this scale demonstrates acceptable internal consistency, ranging from .7 to .8, and high test-retest reliability (Fritz & Helgeson, 1998; Helgeson & Fritz, 1999), including a study of adolescents with diabetes (Helgeson & Fritz, 1996). This scale taps placing others' needs before one's own and distress over concern for others. The scale has been distinguished from both the Big Five personality characteristics and attachment styles (Fritz & Helgeson, 1998). The internal consistency in the present study was .70.

Communion. Communion was assessed with a modified version of the 8-item subscale from the PAQ (Spence

et al., 1974). Items reflect a positive other-orientation. The original PAQ subscale consists of a series of adjective pairs that are rated on 5-point bipolar scales (e.g., “not at all gentle” vs. “gentle”). To facilitate comprehension for adolescents, these words were placed into sentences (e.g., “I am very gentle.”). One item (“I am emotional”) was removed from this scale because it detracted from the internal consistency. The final set of 7 items included doing things for other people, being gentle, being helpful, paying attention to others’ feelings, being kind, being understanding, and being warm and friendly. The internal consistency of the scale was .83.

Disturbed eating behavior. The Eating Disorder Inventory (Garner, 1990) is a self-report instrument that was designed to identify the presence of various attitudes and behaviors that are associated with eating disorders. It is one of the most widely used self-report instruments, and its validity and reliability are well-established. It also has been widely used among adolescents with diabetes and shown to be valid (e.g., Grylli, Hafferi-Gattermayer, Wagner, Schober, & Karwautz, 2005; Jones et al., 2000; Steel, Young, Lloyd, & Macintyre, 1989). The two subscales that were used in the present study were drive for thinness (excessive concern with dieting, preoccupation with weight) and bulimia (episodes of uncontrollable eating or bingeing). Each item is rated on a 5-point Likert-type scale, ranging from 1 = *never* to 5 = *very often*. Three items from the drive for thinness scale were removed because they are biased by the presence of diabetes² (Steel, Young, Lloyd, & Macintyre, 1989). Their inclusion in previous research has artificially inflated the presence of eating disturbances among people with diabetes. The internal consistencies were good in this study (drive for thinness .87 at T1 and .85 at T2; bulimia .75 at T1 and .77 at T2).

Psychological distress. We measured three common but distinct aspects of psychological distress: depressive symptoms, anxiety, and anger. We used the abbreviated form of the Children’s Depression Inventory (CDI) to assess depressive symptoms (Kovacs, 1985; 2001). The CDI is a self-report measure that was designed for children and adolescents. The abbreviated form consists of 10 items, each of which is rated on a 3-point (1 to 3) scale. Reliability of the CDI has been established through administration to psychiatric and medical-outpatient populations. Internal consistency is high, as is test-retest reliability. In the present study, the overall alpha was .73 at T1 and .70 at T2.

We measured anxiety with the 7 items from the Revised Children’s Manifest Anxiety Scale. These were the 7 items that were unique to anxiety when the instrument was factor analyzed with the CDI (Stark & Laurent, 2001). To increase variability in our scale (because we had

reduced the number of items), we changed the true/false format to 3-point scales (not at all true, sort of true, very true of me). The internal consistency in the present study was .68 at T1 and .72 at T2.

We used the 3-item anger scale from the Differential Emotions Scale (Izard, Libero, Putman, & Haynes, 1993). This is a self-report scale of different emotions that has been used with children. Test-retest reliability is high, and validity with comparable scales has been reported. We mixed these items with the 7 anxiety items for the purpose of administration. To make the items consistent with the anxiety items, we changed the response format to a 3-point scale. The internal consistency was .76 at both T1 and T2. Because depressive symptoms, anxiety, and anger were only modestly related (*r*’s ranged from .22 to .43 at T1 and from .28 to .40 at T2), we examined them separately.

Competence domains. To represent the more positive aspects of psychological health, we administered three subscales from the Self-Perception Profile for Children (Harter, 1985) to assess children’s judgments of their competence. We selected two domains that we thought would be most relevant to adolescents—physical appearance and social competence—and then also administered the global self-worth scale. Items are rated on 4-point response scales. The authors have shown that children are able to discriminate among domains of competence, which has been confirmed by factor analytic studies (Harter, 1985). We administered all three scales at T1, and they revealed high internal consistencies: physical appearance .79; social competence .76; global self-worth .75. At T2, we only administered two of the scales, which had acceptable internal consistencies: social competence .67 and global self-worth .75. We replaced the physical appearance subscale at T2 with the 9-item body satisfaction scale from the Multidimensional Body-Self Relations Questionnaire (Cash, 1990), because participants complained about the simplicity of the wording of the physical appearance subscale at T1. Thus, at T2, participants rated the extent to which they were satisfied with 9 aspects of their appearance on a 5-point Likert-type scale (1 = *very dissatisfied*; 5 = *very satisfied*). The internal consistency of the T2 body satisfaction scale was .85. The instruments administered at T1 and T2 both reflect satisfaction with one’s appearance.

We examine the three aspects of competence separately. Although global self-worth was strongly related to appearance esteem at T1 and T2, the other scale inter-correlations were modest at T1 and T2 (see Table 1).

Diabetes outcomes. We measured self-care behavior with the 14-item Self-Care Inventory (La Greca, Swales, Klemp, & Madigan, 1988). This instrument asks

TABLE 1: Intercorrelations of Study Variables

	UC	Comm	Sex	Depr	Anxiety	Anger	Self-worth	Social Comp	Appearance	Self-care	HbA _{1c}	LDL	Drive Thin	Bulimia
UC	—	.51***	.18**	.13*	.23***	.05	-.18**	-.08	-.14*	-.12	.28***	.27**	.26***	.17**
Comm	.51***	—	.31***	-.07	.02	-.15*	.10	.08	.10	.13	.02	.27**	.01	-.08
Sex	.18**	.31***	—	.21***	.13*	.06	-.25***	-.14*	.02**	.06	-.10	.27**	.27***	.04
Depr	.18**	.04	.14*	—	.40***	.28***	-.57***	-.43***	-.40***	-.22*	.11	.17*	.36***	.26***
Anxiety	.33***	.03	.08	.35***	—	.31***	-.40***	-.20***	-.26***	-.20*	.18*	.06	.42***	.28***
Anger	.14*	-.16**	.04	.27***	.37***	—	-.30***	-.08	-.12*	-.24**	.11	.04	.15*	.14*
Self-worth	-.11*	.15*	-.10*	-.50***	-.22***	-.25***	—	.41***	.57***	.21*	-.06	-.18*	-.39***	-.21***
Social comp	-.10	.09	-.09	-.49***	-.23***	-.23***	.47***	—	.29***	.09	-.07	-.01	-.18**	-.12*
Appearance	-.21***	-.02	-.28***	-.48***	-.29***	-.24***	.53***	.31***	—	.29***	-.14	-.14	-.48***	-.18***
Self-care	-.02	.15*	.07	-.20*	-.07	-.22*	.22*	.18*	.19*	—	-.25**	-.06	-.28**	-.36***
HbA _{1c}	.29***	.05	.01	.07	.22*	.13	-.14*	-.08	-.03	-.13	—	-.31***	.23*	.30***
LDL	.25**	.20*	.28***	.11	.01	-.03	-.12	-.03	-.16*	-.08	.29***	—	.17*	.07
Drive thin	.29***	.08	.27***	.27***	.43***	.27***	-.28***	-.09	-.53***	-.13	.12	.01	—	.50***
Bulimia	.31***	-.04	.05	.25***	.41***	.33***	-.30***	-.13*	-.26***	-.30***	.20*	.00	.41***	—

NOTE: Correlations at T1 are below the diagonal; correlations at T2 are above the diagonal. UC = unmitigated communion; comm = communion; depr = depression; social comp = social competence; drive thin = drive for thinness; HbA_{1c} = metabolic control.
p* < .10; *p* < .05; ****p* < .01; *****p* < .001.

respondents to indicate how well they followed their physician's recommendations for glucose testing, insulin administration, diet, exercise, and other diabetes-related behaviors. Validity was established by comparisons to the 24-hour recall (Greco et al., 1990). Each item is rated on a 1 (*never do it*) to 5 (*always do this as recommended*) Likert-type scale. We extended this scale by adding 8 items that reflect more contemporary self-care behaviors: 5 negative behaviors from Weissberg-Benchell et al. (1995; made up blood tests results because numbers were too high, made up blood test results because did not really test, took extra insulin because ate inappropriate food, skipped injections, and ate foods that should be avoided); 1 negative behavior of our own (skipped meals); and 2 positive behaviors of our own (rotating injection sites and measuring food). The negative items were rated on a 1 (*never do it*) to 5 (*always*) scale but reverse coded before summing to form the self-care index. The internal consistency was high at T1 ($\alpha = .78$) and T2 ($\alpha = .82$).

Overall blood glucose control or metabolic control was measured with hemoglobin A_{1c} (HbA_{1c}). These values were collected from medical records for each year adolescents participated in the study. HbA_{1c} values indicate the average blood glucose level over the course of the past 1-2 months. For the laboratory that analyzed HbA_{1c}, the range of values for individuals without diabetes is 4.3 to 6.1. In the current sample, the average HbA_{1c} value was 8.04 (*SD* = 1.31) at T1 and 8.53 (*SD* = 1.54) at T2.

Nonfasting cholesterol levels were examined by the level of low-density lipoproteins (LDL). These data were collected from the same medical records. Although fasting levels are more accurate, it was not feasible to have participants who lived hours away from the clinic fast before their clinic appointments, which were often scheduled in the afternoon. LDL cholesterol was analyzed as a continuous variable.³

RESULTS

Background

First, we examined the relation of unmitigated communion to demographic variables. Unmitigated communion was related to sex, $t(261) = -2.95, p < .01$, such that females ($M = 2.96; SD = .61$) scored higher than males ($M = 2.73; SD = .63$). Unmitigated communion also was related to pubertal status, $r = .22, p < .05$, such that higher Tanner stage was associated with higher levels of unmitigated communion. Unmitigated communion was not related to age, race, household structure, parent education, social status, or body mass index. Unmitigated communion was positively related to communion, $r = .51, p < .001$, consistent with previous research (Helgeson & Fritz, 1999). The intercorrelations of key study variables are shown in Table 1 (T1 below diagonal; T2 above diagonal). Means and standard deviations for these variables are shown in Table 2.

TABLE 2: Means (Standard Deviations) for Study Variables

	Diabetes	Healthy
Unmitigated communion	2.81 (.66)	2.90 (.60)
Communion	3.63 (.73)	3.78 (.59)
T1 drive for thinness	1.86 (.97)	1.87 (.95)
T2 drive for thinness	1.98 (.98)	1.72 (.84)
T1 bulimic symptoms	1.66 (.55)	1.69 (.58)
T2 bulimic symptoms	1.71 (.61)	1.61 (.57)
T1 depressive symptoms	1.15 (.22)	1.15 (.19)
T2 depressive symptoms	1.14 (.17)	1.15 (.22)
T1 anxiety	1.65 (.38)	1.68 (.37)
T2 anxiety	1.52 (.36)	1.60 (.39)
T1 anger	1.77 (.60)	1.75 (.58)
T2 anger	1.96 (.60)	1.99 (.63)
T1 global self-worth	3.56 (.41)	3.55 (.43)
T2 global self-worth	3.35 (.45)	3.33 (.49)
T1 social competence	3.35 (.54)	3.35 (.58)
T2 social competence	3.20 (.45)	3.28 (.52)
T1 appearance esteem	3.09 (.64)	3.12 (.57)
T2 appearance esteem	3.65 (.68)	3.83 (.65)
T1 self-care	4.01 (.45)	
T2 self-care	3.93 (.48)	
T1 HbA _{1c}	8.04 (1.31)	
T2 HbA _{1c}	8.57 (1.59)	
T1 LDL cholesterol	90.55 (31.83)	
T2 LDL cholesterol	92.64 (37.55)	

We used hierarchical multiple regression analysis to predict outcomes. On the first step of the equation, we controlled for sex, pubertal status, and communion. We controlled for pubertal status because it was related to unmitigated communion and potentially related to outcomes.⁴ We controlled for participant sex and communion because they were both related to unmitigated communion, and we wanted to determine the extent to which unmitigated communion was related to outcomes independent of sex and communion. On the second step of the equation, we entered unmitigated communion and group (diabetes vs. healthy), and on the third step of the equation, we entered the interaction between unmitigated communion and group⁵ to determine if unmitigated communion had the same relation to outcomes for adolescents with and without diabetes. We centered the predictors before computing the interaction term to reduce multicollinearity, consistent with the recommendation of Aiken and West (1991).

Predicting Time 1 Outcomes

There were no effects of group or interactions between unmitigated communion and group on any T1 outcome. Thus, we present the results from the final regression equations, excluding these effects in Table 3 (see column labeled "Final Regression Equation" on the left half of table).

Psychological distress. As shown in Table 3, controlling for sex, pubertal status, and communion on the first step, unmitigated communion predicted more depressive symptoms, more anxiety, and more anger on the second step. By contrast, communion predicted less anxiety and less anger. Neither sex nor pubertal status predicted any of these outcomes in the final equation.

Competence. Unmitigated communion predicted lower levels of global self-worth, social competence, and appearance esteem, whereas communion predicted higher levels of all three competence domains. Neither sex nor pubertal status predicted global self-worth or social competence, but sex (male) and lower levels of pubertal status predicted higher levels of appearance esteem.

Diabetes outcomes. Pubertal status was significantly related and communion was marginally related to self-care behavior, such that lower pubertal status and higher communion were associated with better self-care behavior. Unmitigated communion did not predict self-care behavior. Pubertal status and unmitigated communion predicted metabolic control, such that marginally higher pubertal status and significantly higher levels of unmitigated communion were associated with poorer control. For LDL cholesterol, both sex and unmitigated communion emerged as significant predictors, such that being female⁶ and having high levels of unmitigated communion were associated with higher LDL cholesterol.

Eating disturbances. Sex, pubertal status, communion, and unmitigated communion predicted drive for thinness, such that being female, having a high pubertal status, being low in communion, and being high in unmitigated communion were associated with greater drive for thinness. Lower levels of communion and higher levels of unmitigated communion also predicted more bulimic symptoms.

Predicting Time 2 Outcomes

We used similar hierarchical regression analyses to predict T2 outcomes. As shown in Table 4, we controlled for the respective T1 outcome on the first step of the equation; sex, pubertal status, and communion on the second step; entered unmitigated communion and group on the third step; and entered the interactions between unmitigated communion and group on the fourth step of the equation. The final regression equations are shown in the left half of Table 4 (column labeled "Final Regression Equation"). Here, we did find several interactions between unmitigated communion and group and show those interactions when they are significant in Table 4. These interactions were interpreted using the procedures outlined by

TABLE 3: Regression Analyses Predicting T1 Outcomes

		<i>Final Regression Equation</i>				<i>Regression Equation With Mediators</i>			
		β	SE β	Beta	Change in R ²	Beta	Sobel z	p	
<i>Depressive symptoms</i>									
1	Sex	.03	.03	.08		Sex	.06		
	Puberty	.02	.01	.10		Puberty	.06		
	Comm	-.03	.02	-.10	.03	Comm	-.03		
2	UC	.06	.02	.20**	.03	UC	.09		
						DT	.16*	1.91	.06
						BUL	.15*	1.93	.05
<i>Anxiety</i>									
1	Sex	.01	.05	.01		Sex	-.04		
	Puberty	.03	.02	.10		Puberty	.02		
	Comm	-.11	.04	-.20**	.03	Comm	-.10		
2	UC	.24	.04	.42***	.12	UC	.24**		
						DT	.28***	2.92	.003
						BUL	.22***	2.88	.004
<i>Anger</i>									
1	Sex	.04	.09	.04		Sex	.01		
	Puberty	.06	.04	.11		Puberty	.07		
	Comm	-.29	.06	-.33***	.03	Comm	-.25***		
2	UC	.27	.07	.29***	.03	UC	.16*		
						DT	.13	1.74	.08
						BUL	.21**	2.64	.01
<i>Global self-worth</i>									
1	Sex	-.14	.06	-.17		Sex	-.14		
	Puberty	.00	.03	.00		Puberty	.05		
	Comm	.20	.05	.31***	.05	Comm	.24**		
2	UC	-.16	.05	-.25***	.04	UC	-.12		
						DT	-.17*	-2.08	.04
						BUL	-.19**	-2.44	.02
<i>Social competence</i>									
1	Sex	-.15	.08	-.14		Sex	-.14*		
	Puberty	.02	.04	.04		puberty	.04		
	Comm	.18	.06	.22**	.02	Comm	.20*		
2	UC	-.17	.06	-.19**	.03	UC	-.16*		
						BUL	-.07	1.68	.09
<i>Appearance esteem</i>									
1	Sex	-.26	.09	-.21**		Sex	-.13*		
	Puberty	-.09	.04	-.15*		Puberty	-.07		
	Comm	.18	.06	.19**	.11	Comm	.12		
2	UC	-.24	.07	-.25***	.04	UC	-.11		
						DT	-.44***	-3.39	.00
						BUL	-.02	-.37	.71
<i>Self-care behavior</i>									
1	Sex	.14	.10	.16					
	Puberty	-.11	.05	-.25*					
	Comm	.12	.06	.19*	.07				
2	UC	-.06	.07	-.09	.01				
<i>Metabolic control</i>									
1	Sex	-.27	.27	-.11		Sex	-.09		
	Puberty	.24	.13	.18*		Puberty	.16		
	Comm	-.21	.18	-.12	.04	Comm	-.10		
2	UC	.65	.20	.33***	.08	UC	.30**		
						BUL	.09	1.00	.32
<i>LDL cholesterol</i>									
1	Sex	17.68	6.89	.28*					
	Puberty	-2.03	3.32	-.06					
	Comm	.55	4.50	.01	.09				
2	UC	10.02	4.86	.21*	.03				

(continued)

TABLE 3: (continued)

		Final Regression Equation				Regression Equation With Mediators		
		β	SE β	Beta	Change in R ²	Beta	Sobel z	p
<i>Drive for thinness</i>								
1	Sex	.34	.14	.17*				
	Puberty	.16	.06	.17*				
	Comm	-.23	.10	-.16*	.11			
2	UC	.46	.10	.30***	.07			
<i>Bulimic symptoms</i>								
1	Sex	.00	.08	.00				
	Puberty	.06	.04	.11				
	Comm	-.24	.06	-.28***	.03			
2	UC	.37	.06	.42***	.13			

NOTE: Comm = communion; UC = unmitigated communion; DT = drive for thinness; BUL = bulimic symptoms
^{*} $p < .10$, ^{*} $p < .05$, ^{**} $p < .01$, ^{***} $p < .001$.

Aiken and West (1991), in which outcome scores are plotted for individuals scoring plus and minus one standard deviation from the mean on unmitigated communion for each group. We further examined statistically significant interactions with simple slopes analysis (indicated by t tests; Aiken & West, 1991). That is, we examined whether the slope between unmitigated communion and the outcome was significant for each group.

Psychological distress. When T1 depressive symptoms, sex, pubertal status, and communion were statistically controlled, unmitigated communion predicted increases in depressive symptoms over time, whereas communion predicted decreases in depressive symptoms over time. The unmitigated communion by group interaction was not significant. Sex also was significant in the final equation, indicating that females were more distressed than males. Unmitigated communion also predicted increases in anxiety, but this effect was moderated by group. As shown in Figure 1, unmitigated communion predicted increases in anxiety over time for adolescents with diabetes but not healthy adolescents. Simple slopes analysis revealed that the slope for the diabetes group was significant (slope = .13; $t(244) = 2.39$, $p < .05$), but the slope for the healthy group was not significant (slope = -.03, $t(244) = .55$, ns). Unmitigated communion did not predict changes in anger over time, but lower levels of communion predicted increases in anger.

Competence domains. Unmitigated communion predicted declines in global self-worth over time, whereas communion predicted increases in global self-worth over time. There was no interaction of unmitigated communion with group. Sex was significant in the final equation, indicating that females scored lower on self-worth than males. Neither trait predicted changes in social competence. Unmitigated communion predicted decreases in

appearance esteem, whereas communion predicted increases in appearance esteem over time. The main effect of unmitigated communion and the marginal effect of group were qualified by a significant unmitigated communion by group interaction. As shown in Figure 2, unmitigated communion predicted a decline in appearance esteem for adolescents with diabetes but not healthy adolescents. Simple slopes analysis revealed that the slope for the diabetes group was significant (slope = -.24; $t(244) = 2.81$, $p < .01$), but the slope for the healthy group was not significant (slope = .00, $t(244) = .01$, ns).

Diabetes outcomes. There were no significant predictors of self-care behavior, aside from the T1 value. For metabolic control, sex was marginally significant, pubertal status was statistically significant, and unmitigated communion was marginally significant. That is, being male, having a higher pubertal status, and having high unmitigated communion were associated with increases in HbA_{1c} or worse metabolic control. There were no significant predictors of changes in LDL cholesterol over time.

Eating disturbances. Unmitigated communion predicted increases in drive for thinness over time, whereas communion predicted declines in drive for thinness over time. There was a main effect of sex, indicating that females scored higher than males, and a main effect for group, indicating that drive for thinness increased more for adolescents with diabetes than healthy adolescents. There also was an unmitigated communion by group interaction. As shown in Figure 3, unmitigated communion predicted an increase in drive for thinness over time for adolescents with diabetes but not healthy adolescents. Simple slopes analysis revealed that the slope for the diabetes group was significant (slope = .43; $t(244) = 3.92$, $p < .001$), but the slope for the healthy

TABLE 4: Regression Analyses Predicting T2 Outcomes

		<i>Final Regression Equation</i>				<i>Regression Equation With Mediators</i>			
		β	SE β	Beta	Change in R ²		Beta	Sobel z	p
<i>Depressive symptoms</i>									
1.	T1	.44	.05	.46***	.25	T1	.42***		
2.	Sex	.07	.03	.17*		Sex	.13*		
	Puberty	.00	.01	.01		Puberty	-.01		
	Comm	-.06	.02	-.21***	.04	Comm	-.17**		
3.	UC	.04	.02	.13*		UC	.07	1.96	.05
	Group	.01	.02	.03	.01	Group	.05		
						T1 DT	.01		
						T2 DT	.20**		
<i>Anxiety</i>									
1.	T1	.43	.06	.42***	.21	T1	.35***		
2.	Sex	.07	.05	.10		Sex	.04		
	Puberty	.01	.02	.03		Puberty	.02		
	Comm	-.05	.04	-.09	.01	Comm	-.05		
3.	UC	.29	.11	.48**		UC	.33*	1.49	.14
	Group	.08	.04	.10*	.02	Group	.14*		
4.	UC X group	-.16	.07	-.40*	.02	UC X group	-.29	1.32	.19
						T1 DT	.14		
						T2 DT	-.05		
						T1 DT X group	-.22		
						T2 DT X group	.38*		
<i>Anger</i>									
1.	T1	.39	.06	.38***	.17				
2.	Sex	.05	.09	.04					
	Puberty	.04	.04	.07					
	Comm	-.13	.07	-.14*	.02				
3.	UC	.05	.07	.05					
	Group	.07	.07	.06	.00				
<i>Global self-worth</i>									
1.	T1	.38	.06	.34***	.18	T1	.28***		
2.	Sex	-.22	.06	-.24***		Sex	-.18**		
	Puberty	-.01	.03	-.03		Puberty	.00		
	Comm	.15	.05	.22**	.06	Comm	.18**		
3.	UC	-.15	.05	-.20**		UC	-.12*	-1.39	.16
	Group	-.03	.05	-.04	.03	Group	-.05		
						T1 DT	-.11		
						T2 DT	-.18*		
<i>Social competence</i>									
1.	T1	.42	.05	.49***	.27				
2.	Sex	-.10	.06	-.10					
	Puberty	-.01	.03	-.03					
	Comm	.07	.05	.10	.02				
3.	UC	-.06	.05	-.07					
	group	.06	.05	.06	.00				
<i>Appearance esteem</i>									
1.	T1	.47	.06	.43***	.25	T1	.33***		
2.	Sex	-.04	.09	-.03		Sex	.00		
	Puberty	-.06	.04	-.09		Puberty	-.07		
	Comm	.19	.07	.18**	.03	Comm	.14*		
3.	UC	-.47	.18	-.45*		UC	-.32*	1.45	.15
	Group	.13	.07	.09*	.01	Group	.07		
4.	UC X group	.24	.12	.34*	.02	UC X group	.27	1.22	.22
						T1 DT	-.01		
						T2 DT	-.26		
						T1 DT X group	.01		
						T2 DT X group	.00		

(continued)

TABLE 4: (continued)

		Final Regression Equation				Regression Equation With Mediators		
		β	SE β	Beta	Change in R ²	Beta	Sobel z	p
<i>Self-care behavior</i>								
1	T1	.60	.08	.56***	.36			
2	Sex	.08	.09	.09				
	Puberty	-.07	.04	-.14				
	Comm	.07	.06	.10	.02			
3	UC	-.10	.06	-.14	.01			
<i>Metabolic control</i>								
1	T1	.74	.09	.60***	.44	T1	.60***	
2	Sex	-.49	.25	-.16*		Sex	-.19*	
	Puberty	.25	.13	.16*		Puberty	.14*	
	Comm	-.15	.17	-.07	.03	Comm	-.03	
3	UC	.33	.19	.14*	.01	UC	.08	1.26
						T1 DT	.02	
						T2 DT	.12	
<i>LDL cholesterol</i>								
1.	T1	.99	.06	.87***	.76			
2	Sex	-1.48	4.75	-.02				
	Puberty	.12	2.23	.00				
	Comm	.60	3.13	.12*	.01			
3.	UC	-3.50	3.38	-.06	.00			
<i>Drive for thinness</i>								
1	T1	.50	.05	.51***	.34			
2	Sex	.25	.11	.13*				
	Puberty	.04	.05	.04				
	Comm	-.21	.08	-.15*	.03			
3.	UC	.84	.23	.58***				
	Group	-.25	.09	-.14**	.04			
4	UC X group	-.41	.14	-.43**	.02			
<i>Bulimic symptoms</i>								
1	T1	.52	.06	.49***	.26			
2.	Sex	.09	.08	.08				
	Puberty	-.04	.04	-.07				
	Comm	-.07	.06	-.08	.00			
3.	UC	.07	.07	.07				
	Group	-.12	.07	-.10*	.01			

NOTE: Comm = communion; UC = unmitigated communion; DT = drive for thinness; BUI = bulimic symptoms.
* $p < .10$, ** $p < .05$, *** $p < .01$, **** $p < .001$.

group was not significant (slope = .02; $t(244) = .14$ ns). There were no significant predictors of changes in bulimic symptoms over time.

Explaining the Relations of Unmitigated Communion to Outcomes

A primary purpose of this study was to see if eating disturbances, specifically drive for thinness and bulimic symptoms, explained relations of unmitigated communion to poor mental and physical health. To test mediation, three conditions must be met (Baron & Kenny, 1986; Muller et al., 2005). First, the independent variable must be related to the dependent or outcome variable. These relations were addressed in the preceding

section and are shown in the left side of Tables 3 and 4. Second, the independent variable must be related to the mediating variable. These relations also are shown in Tables 3 and 4. As described above, this condition was met for both mediating variables at T1: unmitigated communion was related to greater drive for thinness and more bulimic symptoms. This condition was met for one mediator at T2: unmitigated communion predicted increases in drive for thinness. Third, the mediating variable must be linked to the outcome variable. The correlations between the two disturbed eating behavior measures and outcome variables are shown in Table 1.

When the above-mentioned criteria for mediation were met, we tested mediation by entering both the independent variable (e.g., unmitigated communion) and the

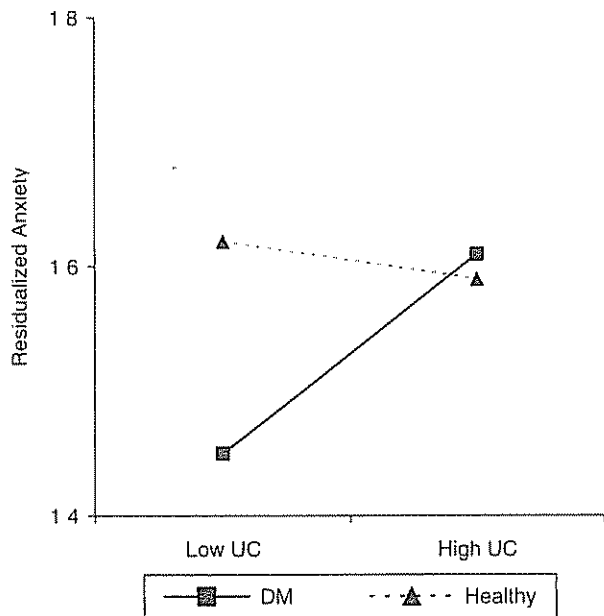


Figure 1 Relations of unmitigated communion to residualized anxiety (T2 controlling for T1) for adolescents with and without diabetes

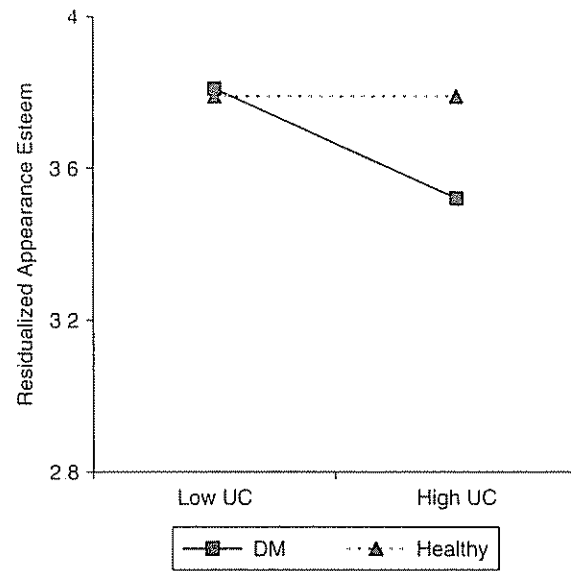


Figure 2 Relations of unmitigated communion to residualized appearance esteem (T2 controlling for T1) for adolescents with and without diabetes

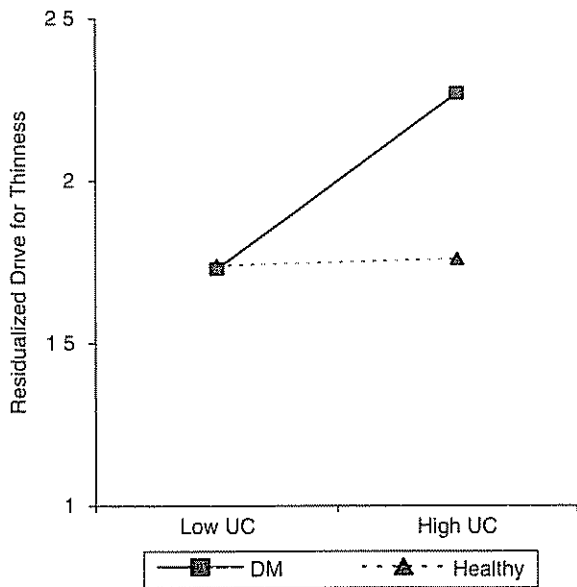


Figure 3 Relations of unmitigated communion to residualized drive for thinness (T2 controlling for T1) for adolescents with and without diabetes

mediating variable into the equation to estimate the dependent variable. The results are shown in the right halves of Tables 3 and 4 under the column labeled "Regression Equation With Mediators." Mediation occurs to the extent that the effect of the independent variable on

the dependent variable in the first condition is reduced in this final equation. As suggested by Baron and Kenny (1986), we used the Sobel test to examine whether the mediator significantly decreased the relation between our independent variable (unmitigated communion) and the outcomes.

To the extent that group moderated the relation of unmitigated communion to outcomes, we tested mediated moderation. We used the same procedure as described above, except that we included the mediating variable as well as the interaction between the mediating variable and the moderator variable in the final equation.

Time 1 mediation. At T1, the conditions for mediation were met for nearly all of the outcomes: depressive symptoms, anxiety, anger, self-worth, social competence (only bulimic symptoms), appearance esteem, and metabolic control (only bulimic symptoms). We reran these regression analyses and included one or both T1 mediators in the equation. The standardized betas for all variables from the final equation are shown in the right half of Table 3. We used the Sobel test to examine the significance of drive for thinness and/or bulimic symptoms as mediators of the effect of unmitigated communion on outcomes. The results of the Sobel test (z score and p value) appear next to each mediator.

As shown in Table 3, when drive for thinness and bulimic symptoms were included in the equation, the relation of unmitigated communion to depressive symptoms became nonsignificant. According to the Sobel test,

both drive for thinness and bulimic symptoms were marginally significant mediators. When drive for thinness and bulimic symptoms were included in the equation to predict anxiety, the relation of unmitigated communion was significantly reduced by both mediators according to the Sobel test—although unmitigated communion remained significant in the final equation. For anger, the relation of unmitigated communion was significantly reduced by the inclusion of bulimic symptoms but not drive for thinness.

Both drive for thinness and bulimic symptoms were significant mediators of the relation of unmitigated communion to global self-worth, and unmitigated communion was no longer significant in the final equation. Bulimic symptoms did not predict social competence but slightly altered the relation of unmitigated communion to social competence. The Sobel test indicated bulimic symptoms was a marginal mediator. The relation of unmitigated communion to appearance esteem was reduced to non-significance by the inclusion of the two mediators in the equation. Drive for thinness was the significant mediator in that equation. Bulimic symptoms did not mediate the relation of unmitigated communion to metabolic control.

Time 2 mediation. At T2, there were main effects of unmitigated communion on depressive symptoms, anxiety, self-worth, and appearance esteem. There was a marginal effect on metabolic control. Unmitigated communion also significantly interacted with group to predict changes in anxiety and appearance esteem, providing us with the opportunity to examine mediated moderation. The mediator that was examined to explain both main and interactive effects of unmitigated communion was change in drive for thinness, as unmitigated communion predicted an increase in drive for thinness over time and unmitigated communion interacted with group to predict changes in drive for thinness. Drive for thinness also was related to all of the above-mentioned outcomes at T2. Here bulimic symptoms was not examined as a mediator because unmitigated communion did not predict bulimic symptoms at T2. Mediation was examined by entering both T1 and T2 drive for thinness into the equations. In this way, T1 drive for thinness would be statistically controlled, and the significance of T2 drive for thinness would represent the significance of the change in drive for thinness over time. In the case of mediated moderation, both the main effects and group interactive effects of T1 and T2 drive for thinness were entered into the equation.

As shown in the right half of Table 4, when T1 and T2 drive for thinness were included in the equation, the main effect of unmitigated communion on depressive symptoms disappeared. Change in drive for

thinness (as indicated by the significance of T2 drive for thinness with T1 drive for thinness in the equation) significantly mediated the main effect of unmitigated communion, as indicated by the Sobel test that appears next to the main effect of unmitigated communion. For anxiety, we tested mediated moderation. The group by change in drive for thinness interaction was marginally significant in the final equation, the main effect of unmitigated communion became marginally significant, and the unmitigated communion by group interaction disappeared in the final equation (see Table 4). However, the Sobel test indicated that changes in drive for thinness did not significantly mediate either the main effect of unmitigated communion or the unmitigated by group interaction on anxiety. For global self-worth, including change in drive for thinness in the equation reduced the main effect of unmitigated communion to marginal significance but did not significantly mediate this effect. For appearance esteem, again we tested mediated moderation. Although the main effect of unmitigated communion was reduced to marginal significance and the unmitigated communion by group interaction disappeared in the final equation, the effects for drive for thinness were not significant, and the Sobel test indicated no significant mediation. Finally, drive for thinness did not mediate the marginal relation of unmitigated communion to metabolic control.

DISCUSSION

Consistent with previous research, unmitigated communion predicted greater psychological distress, as indicated by greater depressive symptoms, greater anxiety, and greater anger. Much of the previous research, however, was conducted with adults. This study shows that even among early adolescents, a focus on others to the exclusion of the self is associated with psychological distress. Unmitigated communion also predicted lower levels of competence, including global self-worth, social competence, and appearance esteem. The link to global self-worth is consistent with previous research on adults showing that unmitigated communion is associated with low self-esteem (e.g., Fritz & Helgeson, 1998). However, this is the first study to show links to specific facets of self-esteem—unmitigated communion is associated with perceiving oneself as lower in social competence and perceiving oneself as less attractive. In addition to confirming previous cross-sectional relations, this study adds to the growing body of evidence that unmitigated communion predicts increases in psychological distress and decreases in psychological well-being over time. Unmitigated communion predicted an increase in depressive

symptoms and anxiety over 1 year and a decline in global self-esteem and appearance esteem over 1 year. These findings emerged when participant sex, pubertal status, and levels of communion (previously referred to as psychological femininity) were statistically controlled. Despite the fact that sex was related to a number of outcomes, as shown by the zero-order correlations in Table 1, participant sex was only occasionally a significant predictor of psychological or physical health in the final regression equations that included both unmitigated communion and communion. On the whole, our gender-related traits did a better job than biological sex in predicting health outcomes.⁷

Given the conceptual and empirical overlap between unmitigated communion and communion, it is important to distinguish their effects. When both unmitigated communion and communion were entered into the equation, unmitigated communion was not only associated with adverse outcomes, but communion was associated with better psychological outcomes. Of the two, relations with unmitigated communion tended to be stronger. When we examined the zero-order correlations of unmitigated communion and communion to outcomes (shown in Table 1), unmitigated communion revealed correlations in the direction of poorer outcomes consistent with the effects reported in this article, whereas communion often revealed no relations to outcomes. Thus, only by taking both gender-related traits into consideration is the more complete picture revealed between aspects of an other-orientation and health. In previous research, we have argued that communion is a broad construct that often reveals contradictory relations to health outcomes because of its overlap with so many other more specific relationship-oriented constructs (Helgeson & Fritz, 1999), such as unmitigated communion. The results from this study confirm this idea. When the overlap with unmitigated communion was partialled out of the equation, communion consistently predicted better psychosocial outcomes. There are a number of other positive relationship-oriented constructs that have been linked to good health, such as secure attachment style and communal orientation to relationships. Secure attachment style has been related to less psychological distress (Frey, Beesley, & Miller, 2006) and compliance with medical care among adults with diabetes (Ciechanowski et al., 2004). A communal orientation toward relationships also has been linked to psychological and physical health (Monin, Feeney, & Clark, 2006).

We also examined whether unmitigated communion would have the same health consequences for adolescents with and without diabetes at baseline and 1 year later. Our results showed no detectable difference in the association of unmitigated communion to psychological outcomes for adolescents with and without diabetes in our

cross-sectional analyses, but differences emerged in our longitudinal analyses. Unmitigated communion was more strongly related to increases in anxiety and decreases in appearance esteem over a 1-year period for adolescents with diabetes than healthy adolescents. In addition, unmitigated communion was more strongly associated with an increase in drive for thinness over 1 year among adolescents with diabetes than healthy adolescents. Thus, unmitigated communion is not only associated with poor psychological health among adolescents, but it may have stronger health implications for adolescents who already have a health problem. In fact, there were implications of unmitigated communion for diabetes-related outcomes. Unmitigated communion was associated with poor metabolic control and higher LDL cholesterol at baseline and revealed a marginal relation to declines in metabolic control over time. These findings show that unmitigated communion may be associated with physical health problems as well as psychological ones.

The one avenue of completely uncharted territory in this article with respect to unmitigated communion involved disturbed eating behavior. This is the first study to establish a connection between unmitigated communion and disturbed eating behavior. Unmitigated communion was associated with greater drive for thinness and more bulimic symptoms cross-sectionally and predicted an increase in drive for thinness over time. Interestingly, communion predicted lower levels of disturbed eating behavior cross-sectionally and predicted a decline in drive for thinness over time. Again, the zero-order correlations of communion to eating disturbances revealed no relations. It was only when both unmitigated communion and communion were in the equation that communion was associated with lower levels of eating disturbances. Thus, these findings help to reconcile previous research that has tried to link gender roles to eating behavior. The aspect of communion that is not shared with unmitigated communion (presumably the healthy aspect of an other orientation) is associated with lower levels of eating disturbances, whereas the excessive other focus that is associated with self-neglect (i.e., unmitigated communion) is associated with more disturbed eating behavior. Our findings underscore the importance of distinguishing among different components of gender roles and confirm others' notion (e.g., Martz et al., 1995) that it is the more negative aspects of the female role that are associated with eating pathology.

The finding of a link between unmitigated communion and aspects of disturbed eating behavior is especially important in this study because the relation to drive for thinness over time was stronger for adolescents with diabetes than adolescents without diabetes. Thus, unmitigated communion may be viewed as a risk factor for disturbed eating behavior in this population. Again,

this finding suggests that unmitigated communion may have more severe consequences for individuals who have a health problem—in particular, a health problem that requires personal attention. A strong focus on others may undermine this needed attention.

We also explored whether disturbed eating behavior mediated or explained the relations of unmitigated communion to health outcomes. Disturbed eating behavior mediated the majority of the cross-sectional relations of unmitigated communion to psychological health and some of the longitudinal relations of unmitigated communion to psychological health. Of the two indicators of disturbed eating behavior, drive for thinness was the more powerful predictor over time. Unmitigated communion predicted an increase in drive for thinness over time, and that increase was associated with increases in psychological distress and reductions in domains of competence.

Disturbed eating behavior did not predict or mediate the relation of unmitigated communion to metabolic control or LDL cholesterol. Thus, these relations are left unexplained. Mediators that have been examined in previous research might provide the explanations. Self-neglect is one possibility. To the extent that individuals high in unmitigated communion focus on others at the expense of taking care of themselves, their physical health could suffer. However, in the present study, we had no links between unmitigated communion and our measure of self-care behavior. Thus, we do not have any evidence to support this possibility. However, the kind of self-neglect that is associated with unmitigated communion might be more situation-specific than that assessed by the global self-care behavior instrument. For example, individuals high in unmitigated communion might not test their blood sugar, administer their insulin, or eat the appropriate food when friends present with problems or when friends need their help. Studies of more micro-level processes involving social interactions could examine this possibility.

Before concluding, there are a number of limitations of this study that need to be acknowledged. First, we did not study clinical eating disorders but disturbed eating behavior. Although disturbed eating behavior is a risk factor for clinical eating disorders, we do not have any evidence that unmitigated communion predicts the clinical diagnosis. In addition, our measure of disturbed eating behavior might not have been sensitive enough to detect many of the more extreme behaviors that would be characteristic of an eating disorder. It also is questionable whether adolescents would have provided honest responses to those kinds of items on a self-report measure. These measurement issues might account for why we were unable to detect a relation between eating disturbances and the physical health outcomes examined in this study (LDL cholesterol, metabolic control).

Second, the sample was largely Caucasian, reducing the generalizability of our findings. The fact that we recruited adolescents with diabetes from a single clinic further reduces generalizability, although the clinic draws from a large and diverse area. Third, although we linked unmitigated communion to health outcomes and eating disturbances, all of these measures were based on self-report. Behavioral indicators of these variables would strengthen our findings. Finally, the link of unmitigated communion to physical health—in particular, metabolic control—is intriguing and replicates an earlier study (Helgeson & Fritz, 1996), but the relation found here was largely left unexplained.

In conclusion, unmitigated communion is associated with psychological distress, lower levels of general competence, and lower levels of competence in the social and appearance domains among early adolescents. Unmitigated communion also was related to disturbed eating behavior, and these eating disturbances largely explained the relations of unmitigated communion to psychological outcomes. Among adolescents, an excessive focus on others may lead to greater internalization of societal messages about appearance and dieting, which result in disturbed eating behavior and subsequent distress. The fact that the relations of unmitigated communion to some outcomes were stronger for adolescents with than without diabetes indicates that unmitigated communion may be especially problematic for adolescents who already have a physical health problem. Diabetes is a disease that requires attention to the self, an attention that may be absent among individuals who are high in unmitigated communion. The fact that unmitigated communion was related to poor metabolic control and showed a trend toward predicting declines in metabolic control over time is supportive of this possibility. Future research should continue to explore the psychological and behavioral mechanisms that may link unmitigated communion to poor physical health.

NOTES

1. We did not control for social status in the analyses because it was not related to unmitigated communion, communion, or disturbed eating behavior. Thus, it could not account for any of the findings reported in this article. To further support this assertion, we reran all of the analyses with social status in the equation and found the same results reported in this article.

2. The 3 items that were removed were "I eat sweets and carbohydrates without feeling nervous," "I think about dieting," and "I feel extremely guilty after overeating."

3. Results were the same as those reported in the text when LDL values were analyzed as dichotomous variables using 110 as a cutoff (criterion for high cholesterol for people with diabetes) and also using 130 as a cutoff (criterion for high cholesterol for healthy people).

4. Because Tanner stage was not available for 4 healthy participants, they were excluded from all analyses.

5. The communion by group interaction did not predict any T1 or T2 outcome

6. All 11 children whose LDL exceeded 130 were female.

7. The relation of unmitigated communion to outcomes was generally the same for males and females. We tested the sex by unmitigated communion interaction and found only one interaction at T1 for LDL. The relation of unmitigated communion to LDL was stronger for females than males. Unmitigated communion did not interact with sex to predict any T2 outcome

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