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Dyadic Processes in Weight Management

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Weight loss achieved during behavioral weight-loss interventions is often not maintained. Because both the physical and social environment can shape weight-related behaviors, understanding weight-loss maintenance in context could provide insight regarding ways in which the home environment might be structured to facilitate long-term weight-loss maintenance. This study examined the effects of household structure and partner support on weight-loss maintenance in couples following a randomized weight-loss intervention. It was hypothesized that more structure and more partner support would be beneficial, whereas individual inputs and discrepant, or unfair, inputs would be detrimental. Potential mediators were also explored.

Couples (N = 43) were weighed at 12 and 18 months after baseline, and completed measures of household structure (perceived household chaos, stressors, and mealtime structure), personal and partner inputs in household management (chore inputs and perceptions of fairness), and potential mediators (eating self-efficacy, exercise self-efficacy, locus of control, and perceived stress).

Lack of structure (i.e. chaos and meal structure) related to lower eating and exercise self-efficacy and higher stress, whereas partner chaos related to higher exercise self-efficacy. Stressors related to lower, and meal structure to higher, locus of control. Stressors and chaos predicted lower BMI at 18 months. Partner chore inputs related to higher eating self-efficacy, and actor chore inputs related to higher BMI at 18 months. Discrepancies in chore inputs related to higher locus of control, lower stress, and lower BMI at 18 months. Partner reports of fairness

related to higher locus of control, and actor fairness related to lower locus of control and stress. Eating self-efficacy and locus of control predicted successful weight-loss maintenance.

A structured environment tended to predict more positive outcomes on psychological mediators, which predicted weight-loss maintenance, highlighting the potential to utilize household structure to promote weight-loss maintenance (although weight-loss maintenance benefits of chaos and stressors were unexpected). The fact that discrepant inputs in household chores tended to predict better outcomes at 18 months may reflect patterns of labor division that allow increased focus on meal preparation or exercise. Future interventions might improve their success by targeting environmental structure and social forces to support sustained weight-loss maintenance in couples.

Dyadic Processes in Weight Management

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Dyadic Processes in Weight Management

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The increasing prevalence of overweight and obesity is one of the most challenging and widespread public health threats of our time, with serious health and financial implications (Finkelstein et al., 2012; Flegal, 2005; Fryar, Carroll, & Ogden, 2014). Although weight-loss interventions have shown some promise, long-term success is rare, and those who lose weight often fail to maintain weight loss post-intervention (Jeffery et al., 2000; Wadden, Butryn, & Byrne, 2004). It is thus crucial to understand what leads to regain, so we may design effective interventions that provide the necessary skills and structure to maximize long-term treatment effectiveness. Creating a context that bolsters success may be possible through modifying both the social and physical environment. This study examined the impact of the household environment and dyadic environmental management processes (i.e. labor division) on weight-loss maintenance in couples, following one couple member's participation in a randomized weight-loss intervention. Widely accepted, individually-focused predictors of weight-loss maintenance (e.g., self-efficacy) were examined as potential mediators of the effect of social and environmental processes on BMI.

Weight Loss in Context

During weight-loss interventions, many people are able to access supports and resources that may not be available to them once treatment has ended. Understanding how a person navigates and maintains weight loss within his or her social and physical environment may shed light on new intervention targets with potential to effectively prevent weight-cycling by inculcating healthful habits and psychological well-being. Thus far, however, interventions have mostly focused on the individual in treatment. A systematic review by McLean, Griffin, Toney, and Hardeman (2003) found only 16 interventions involving families in treatment, with only seven targeting married couples, and one targeting a significant other. Because people are

embedded within a broader social context, an individual-focused approach offers insufficient leverage by considering only part of the picture. The impact of family on health outcomes is evidenced by the fact that untreated partners of weight-loss intervention participants can also experience significant weight loss (Golan, Schwarzfuchs, Stampfer, & Shai, 2010; Gorin et al., 2008; 2013). It seems likely that both social dynamics (e.g., emotional or instrumental support, encouragement) and household dynamics (e.g., structure/routine, family meals) contribute to these findings.

Social dynamics are key contributors to patterns of weight change within families and friendship structures (Christakis & Fowler, 2007), although these effects are not always straightforward. For example, there is evidence that the structure of the home environment may shape weight-related dynamics within dyads. In one condition of a randomized weight-loss intervention, in addition to standard treatment, research staff intervened in the home in an attempt to help participants improve access to healthy foods and exercise equipment, decrease unhealthy and fattening foods in the home, and provide reminders for weight loss (e.g., scales, full-length mirrors). In-home partners were also invited to attend weight-loss sessions. Participants in this condition altered their home environment to a greater extent and lost more weight than those in the standard treatment condition. Participants' in-home partners also lost more weight in this arm of the study, indicating a non-trivial effect of environmental structure (Gorin et al., 2013). In a follow-up analysis focused specifically on dyadic interdependence in weight change, Cornelius, Gettens, and Gorin (2016) found that participant and partner weight-loss trajectories were positively correlated in the home-environment condition, but negatively correlated in the standard treatment condition. In other words, couples who had an altered home environment had similar weight-loss trajectories, whereas those who did have a changed

environment had dissimilar weight-loss trajectories. This indicates that structuring an environment so as to be conducive to weight loss may facilitate mutual weight loss within couples. It is also important to note that the home-environment intervention invited partners to come to treatment, thereby creating a potential partner-support system, and potential co-management of home structure in a way that promotes healthy choices (Gorin et al., 2014). Although not examined directly, such co-management of the home-environment in a way that facilitates weight loss may bolster intervention effects and even promote long-term weight-loss maintenance. Much of the research directly examining the effects of social support on weight loss has examined emotional or food-related forms of support (e.g., autonomy support; Gorin, Powers, Koestner, Wing, & Raynor, 2014). If the structure of the home environment is significantly impacting weight outcomes, it follows that partner contributions to changing or managing that environment will also have an effect. Research on this front is, however lacking. This study explicitly examines instrumental support provision as it relates to management and structure in the home environment.

Household Environment: Structure and Chaos

Although research suggests that a lack of structure can be detrimental to health, household disorder and how this disorder is handled within families is an understudied area in weight management. Much of this literature does not focus on household disorder *per se*, but instead has focused on weight and eating patterns (e.g., disordered eating, fruit and vegetable intake) as it relates to family meal structures, such as eating meals together. In general, these results show that more mealtime structure promotes healthier eating and weight (Berge, MacLehose, Loth, Eisenberg, Fulkerson, & Neumark-Sztainer, 2012; Chan & Sobal, 2011; Neumark-Sztainer, Wall, Story, & Fulkerson, 2004; see also Martin-Biggers et al., 2014). In

terms of environmental disorder, Vartanian, Kernan, & Wansink (2016) conducted a controlled experiment and found that a chaotic (e.g., messy, noisy) kitchen and priming lack of control increased consumption of cookies.

Broader patterns of household disorder may matter as well, as opposed to just order around kitchens and mealtimes. Weight-loss behaviors are commonly triggered by daily patterns and routine (Lally, Chipperfield, & Wardle, 2008; Lally, Wardle, & Gardner, 2011). A disorderly environment may disrupt habit formation, preventing integration of weight-loss behaviors into one's lifestyle. Indeed, there is already some indication that family routines can be protective against obesity in children and adolescents (Anderson, 2012), and qualitative work documents themes whereby a lack of structure can interrupt healthy routines, and structure can facilitate weight loss and weight-loss maintenance (Rogerson, Soltani, & Copeland, 2016). Bioecological models of behavior also suggest that chaotic environments inhibit functional development of motivation and competence (Bronfenbrenner & Evans, 2000), which could in turn impede successful weight management. This could be reflected in the fact that some have found a link between low socioeconomic status (SES) and obesity. Low SES is associated both with increased BMI (McLaren, 2008) and with less environmental structure (e.g., overcrowding, noise; Evans, Gonnella, Marcynyszyn, Gentile, & Salpekar, 2005). If disorder does inhibit healthy routine formation, such chaos might also impede the effectiveness of structured weight-loss interventions.

This study defines household structure in three different ways. The first is as a perception of an organized or chaotic environment (e.g., feeling rushed, disorganized, etc., at home). The second is as an index of objective stressors that may contribute to household disorder (e.g., children under the age of two, job loss). The third is focused on food, and specifically deals with

structure around mealtimes (e.g. eating the same foods, picky eaters). All of these facets of structure and disorder have the potential to impact weight management processes, both directly (e.g., through inhibiting routine health behaviors) and indirectly (e.g., by increasing stress).

Household Management and Fairness

The effects of co-management of household disorder and structure on weight management is even less studied, although these processes likely also impact weight management through both direct and indirect channels. Allocation of household tasks could play an important role in management of household chaos and its impact on health behaviors. On one end of the spectrum, an individual may be charged with all of the household tasks, which could further increase stressors and reduce time and energy to participate in healthy activities. On the other, a partner might manage all the household tasks, thereby creating a space within which the individual can establish daily patterns. Partner assistance may also have positive psychological effects. Evidence for this was found in a study of dual-earning German couples that suggested partner inputs on household tasks may decrease cortisol (Klumb, Hoppmann, & Staats, 2006).

Lack of control in managing household structure might, however, undermine self-efficacy or create an uncomfortable sense of indebtedness, which could have adverse effects on weight-loss maintenance. Partner provision of support is not always beneficial. Couple members receiving emotional support can experience increased anger or depression when that support is recognized as such (Shrout, Herman, & Bolger, 2006), potentially due to undermining feelings of competence or to focusing attention on a stressful issue at hand. Patterns where each couple member supports the other (i.e. support is reciprocated), however, can carry emotional benefits (Gleason, Iida, Bolger, & Shrout, 2003). Of note, Gleason et al. (2003) did not directly assess

equity or perceptions of fairness. Rather, they focused on a simple report of providing support and receiving support (yes or no).

Research examining the effects of couple inputs and discrepancies in instrumental or practical supports, such as household management, is more limited. In one study, Shrout et al (2006) examined both emotional and practical support provision, but did not find the same effects. This sample was restricted to recent graduates during a high-stress time (taking the bar exam), so it is not clear how couple dynamics might play out in daily practical supports and health behaviors. Either way, it remains possible that unequal inputs might have negative effects on self-efficacy, sense of control, or stress, which could have negative effects on weight management.

In addition to direct assessment of inputs, it is also important to examine perception of personal and partner inputs and fairness. Perception of fairness might matter more than matched inputs. Some couples may adhere to principles of equity (e.g., if one household member contributes more financially then they contribute less domestically), while others may adhere to principles of equality (e.g., equal inputs from both members of a couple; Gager, 2008). It may be that direct assessments of what is fair or unfair will capture a broad sense of ‘unjust’ labor division across both types of households, and will therefore have a stronger impact on partner perception and psychological outcomes than direct questions concerning who does what household chores. To capture both of these possibilities, this study defines social/instrumental support in household management in two ways. The first is as a relative index of household inputs, and the second is as direct perceptions of fairness in household labor division.

Psychological Mediators

The effects of household chaos and dyadic instrumental support processes on weight management might operate through both direct and indirect pathways. In this study, three different individually-focused and established predictors of successful weight management (self-efficacy, locus of control, and stress) were examined as potential mediators.

Self-Efficacy

Self-efficacy, or a person's belief in his or her ability to succeed within a given domain, is a central construct in numerous theories of health behavior (e.g., the Health Belief Model, Rosenstock, Stretcher, & Becker, 1994; Social Cognitive Theory, Bandura, 1977), and is an consistent precursor to engagement in health promoting behaviors. Baseline self-efficacy and increases in self-efficacy for both eating and exercise are predictors of successful weight loss (Armitage et al., 2014; Byrne, Barry, & Petry, 2012; Palmeira et al., 2007; Wingo et al., 2013) and weight-loss maintenance (Elfhag, & Rössner, 2005).

One's living situation likely contributes to self-efficacy for healthy eating and engaging in exercise. Broadly, living in a chaotic environment can undermine self-efficacy and increase feelings of helplessness (Evans, 2003). Although the association between living situation and eating self-efficacy has not been directly examined, the fact that people cite the environment as a potential barrier to their ability to eat as desired hints this might be the case (Rogerson et al., 2016). An environment conducive to exercise is also key to engagement in consistent exercise – people living in areas where there is not easy access to parks, sidewalks, or other recreational spaces, or where there are fewer sidewalks, tend to walk less than people who do have access to such spaces (Saelens & Handy, 2008). In other words, an environment that is not organized to promote activity may reduce the amount of activity a person engages in on a daily basis.

Detrimental effects of disorder in the environment on self-efficacy might be buffered by active participation and instrumental support: exerting personal control or garnering partner assistance in managing environmental disorder could reduce any negative effects of chaos on self-efficacy for eating or exercise. Studies examining the moderating effect of self-efficacy on the association between the built environment and walking have generally found that positive environmental characteristics promote walking more strongly for people with low self-efficacy (Carlson et al., 2012; Van Dyck et al., 2014). Stated otherwise, feeling self-efficacious attenuated the negative effects of an undesirable environment on walking. Further, experiencing success at environmental management could boost self-efficacy even more (Bandura, 1977), creating a positive feedback loop that promotes weight loss and weight-loss maintenance.

Locus of Control

Self-efficacy is conceptually linked to perceptions of personal control over outcomes. If someone feels efficacious, they, by definition, should feel in control. However, findings are mixed regarding the relationship between internal locus of control and weight-loss outcomes (Elfhag, & Rössner, 2005). This may be due to a lack of attention to home environment and how this environment is managed, which is the broader context in which weight-loss efforts are embedded. Partner inputs and partner assistance in behavioral management – either through encouragement or providing a supportive environmental structure – must be accounted for as well.

Partner effects on personal locus of control are likely nuanced. For example, spousal support has been shown to be beneficial for weight loss when it supports individual autonomy, whereas coercive or directive control may be detrimental (Gorin et al., 2014). It is possible that supports that are completely external do not support a sense of personal control, but may still

benefit weight loss in the short-term. Conversely, providing autonomy support might allow a person to experience success as driven by his or her own choices and efforts. Similar dynamics may come into play regarding household control, especially under circumstances where there are substantial differences in inputs. A person trying to manage chaos with a partner who does nothing to assist may not feel in control, which could undermine weight-management efforts. Equal inputs might assuage this chaos, and, finally, total partner control of the environment might facilitate short-term success, but undermine a global sense of internal control in the longer term. It is also possible that total partner control of the environment is seen as helpful (when seen as fair), which allows someone to focus on weight management. These possibilities are speculative, and merit further exploration.

Stress

Stress is a third factor that might explain a link between health and environment. This has been hypothesized across multiple health domains, especially in relation to socioeconomic status and health outcomes (Gallo & Matthews, 2003). Chaotic environments have the potential to increase stress, and stress can promote snacking and overeating (Epel, Tomiyama, & Dallman, 2012; Groesz et al., 2012; O'Connor, Jones, Conner, McMillan, & Fergusun, 2008), and undermine successful weight-loss maintenance (Elfhag, & Rössner, 2005). Interestingly, Groesz et al. (2012) found that chronic exposure to stress, a variable measured by questions asking about the environment – such as "the place you live is too noisy or polluted" – was also linked to drive to eat, indicating that a chaotic environment has direct, theoretical, links to stress, and, likely, to overweight and obesity.

Theories of dyadic stress and coping highlight ways in which partner behaviors might reduce stress induced by the environment. This can include supportive coping (e.g., assistance

such as help with daily tasks), delegated coping (e.g., taking over daily tasks), or hostile coping (i.e. assistance accompanied by insincerity or hostile comments; Bodenmann, 2005). Partner inputs via either supportive or delegated coping to manage a chaotic environment might buffer stress, promoting more successful weight management. Actual or perceived unfair inputs might undermine these effects, however, given that they may be damaging to the relationship and undermine more supportive forms of dyadic coping.

Current Study

In summary, the structure of the home environment and dyadic management processes may facilitate weight-loss maintenance in couples. This study tested the simultaneous influences of *home environment* and *personal and partner environment management* on weight-loss maintenance. Specifically, it was expected that a chaotic home environment (measured by perceived chaos, objective stressors, and family meal structure), increased chore inputs, and higher discrepancies in chore inputs would have an adverse effect on weight-loss maintenance. In contrast, it was expected that partner chore inputs and perceiving fairness in household inputs would be related to better weight outcomes. Finally, it was expected that these effects would be partially mediated by psychological variables (self-efficacy, perceived locus of control, and stress). These predictions can be organized by variable type:

Hypothesis 1: A chaotic home environment will adversely impact weight-loss maintenance and psychological predictors of weight-loss maintenance.

Hypothesis 2a: Personal chore inputs will adversely impact weight-loss maintenance and psychological predictors of weight-loss maintenance.

Hypothesis 2b: Partner chore inputs will facilitate successful weight-loss maintenance and improve outcomes on psychological predictors of weight-loss maintenance.

Hypothesis 2c: Input discrepancies and a lack of fairness will adversely impact weight-loss maintenance and psychological predictors of weight-loss maintenance.

Hypothesis 3: Effects of the home environment and environmental management on weight-loss maintenance will operate in part through known psychological predictors of weight-loss maintenance.

Two different dyadic analytic models were tested. These were the Actor-Partner Interdependence Model (APIM; Kenny, Kashy, & Cook, 2006) and the Common Fate Model (CFM; Ledermann & Kenny, 2012). In the APIM, outcomes are modeled as a result of person (*actor*) and *partner* characteristics. In contrast, the CFM models outcomes as a function of individual and shared, dyadic characteristics (latent variables). A more detailed explanation of these models is provided in the methods section, and conceptual diagrams applied to study hypotheses can be seen in figures 1 and 2, for the APIM and CFM, respectively.

Methods

Participants

Participants were 43 couples previously enrolled in a randomized control trial of a weight-loss intervention who indicated a willingness to be recontacted after the conclusion of the study. In this trial, an index participant was randomly assigned to either a nationally available weight-loss program or a self-guided control condition. Intervention participants received free access to all online and in-person programming. Control participants received a written handout with weight-loss information. Participant spouses were also enrolled in the study, although they received no active treatment. Inclusion criteria for primary participants were *1)* age 25 or older, *2)* BMI between 27-40 kg/m^2, and *3)* no contraindications for weight loss (e.g., COPD). Spouses had to live with the participant, and have a BMI of 25 kg/m^2 or greater. Participants eligible for

this study were recontacted 12 months after the initial weight-loss trial began. Participants in the nationally available weight-loss program condition received access to all program materials between baseline and six months, whereas the control condition received access to these same materials after the active intervention ended (i.e. between six and 12 months). The only inclusion criterion for participating in the study continuation was that both the intervention participant and spouse agreed to participate.

Measures

Chaotic environment. Chaos was measured using the Confusion, Hubbub, and Order Scale (CHAOS; Matheny et al., 1995). This scale includes 15 items, such as, "There is very little commotion in our home" and "You can't hear yourself think in our home" (reverse scored). Answers were scored from *1*, very much like your own home, to *4*, not at all like your own home (α = .88).

Objective stressors. An index of 18 objective household stressors was adapted from previously published inventories (e.g., *Social Readjustment Rating Scale,* Holmes & Rahe, 1967; *Daily Hassles,* Kanner, Coyne, Schaefer, Lazarus, 1981). Items were specifically thought to alter household environment dynamics, and included: *1)* the presence of a child in the home, *2)* a child under the age of two, *3)* having more than one job, *4)* a partner having more than one job, *5)* working more than 40 hours a week, *6)* a partner working more than 40 hours a week, *7)* job change, *8)* job loss, *9)* access to help around the home, *10)* access to family help, *11)* chronic illness, *12)* having a regular schedule, *13)* owning a pet, *14)* recent home renovations, *15)* recent car repairs, *16)* recent mortgages or loans, *17)* recent illness or injury, and *18)* recent trouble with the law. Answers indicating the presence of a stressor were scored as *1*, negative answers as *0*. Answers were summed to form an index.

Mealtime structure. Five questions designed to capture disorder during mealtimes and ease of serving healthy family meals were included. Example items include, "When we eat together as a family, all of us eat the same meals," and "There are picky eaters in my family." Answers were scored from *1*, strongly disagree, to *7*, strongly agree. Items were coded so that higher numbers indicated more structure around mealtimes (α = .76).

Household inputs. Household inputs were measured using an index to assess inputs for nine different household tasks. These tasks have been assessed as measures of household input in previous research (Gager, 2008), and were: *1)* washing and ironing, *2)* washing dishes, *3)* preparing meals, *4)* cleaning the house, *5)* shopping, *6)* paying bills, *7)* driving household members, *8)* outdoor and maintenance tasks, and *9)* care maintenance and repair. Inputs were measured as estimated percentage input from *0* to *100 percent* and averaged to form an index of overall household chore participation.

A direct assessment of fairness in household chores, asking, "How do you feel about the fairness in your relationship in the following area: household chores?" (e.g., Gager, 2008), along with the additional area of "household management" was included as a direct assessment of perceptions of household inputs, with response options from *1*, not at all fair, to *4*, extremely fair. Two additional questions about doing more than one's own share of household chores and household management were also included, with response options from *1*, not at all true, to *4*, extremely true.[1] Items were coded so that higher numbers indicated more fairness in labor distribution (α = .72).

Self-efficacy. Self-efficacy for eating was measured using the Weight Efficacy Lifestyle Questionnaire (WEL; Clark et al., 1991), a 20-item scale assessing ability to resist eating when

[1] These items were also asked about partner share of chores and management, however, these items did not correlate with the others (α = .52) and were dropped from the final scale score.

experiencing negative emotions, when food is available, when experiencing social pressure, when experiencing physical discomfort, and when engaged in positive activities. Responses were measured on a scale from *1*, not confident, to *10*, very confident (α = .94).

Self-efficacy for exercise was measured using the Self-Efficacy for Exercise Scale (Resnick & Jenkins, 2000), consisting of nine items assessing confidence to engage in moderate-intensity exercise 150 minutes per week, or 30 minutes a day five times per week, under different circumstances (e.g., feeling tired, being busy). In the original scale, the exercise amount is three times per week for 20 minutes; here it was adjusted to match aerobic exercise recommendations from Centers for Disease Control and Prevention (CDC, 2015). Responses were measured on a scale from *1*, not confident, to *10*, very confident (α = .95).

Locus of control. Locus of control was measured using the Dieting Beliefs Scale (DBS; Stotland & Zuroff, 1990), a 16-item measure assessing beliefs about personal control over weight. Example items include, “Each of us is directly responsible for our weight,” and “Most people can only diet successfully when other people push them to do it” (reverse scored). Responses are on a scale from *1*, not at all descriptive of my beliefs, to *6*, very descriptive of my beliefs (α = .68).

Stress. Stress was measured using the Perceived Stress Scale (PSS-10; Cohen & Williamson, 1988), a ten-item scale, including questions such as, “In the last month, how often have you been upset because of something that happened unexpectedly?” and “In the last month, how often have you felt nervous and stressed?” Answers were scored from *0*, never, to *4*, very often (α = .90).

Procedure

At least five attempts were made to contact 127 of the original couples (three did not consent to be contacted) at 12 and 18 months, and three voicemails were left. Interested participants returned to the lab with their spouses to fill out questionnaires and provide objective weight data at 12 and 18 months after the conclusion of the weight-loss trial. Before completing procedures, all participants provided informed consent. All materials were approved by the University of Connecticut Institutional Review Board. Participants were reimbursed $10 at each visit.

Data Analysis Strategy

Published scales were scored by computing the mean (CHAOS, Matheny et al., 1995; WEL, Clark et al., 1991; ESE, Resnick & Jenkins, 2000; DBS, Stotland & Zuroff, 1990; PSS, Cohen & Williamson, 1998). The objective stress index was scored by summing the items. All of these scores were specified as single indicators for a latent construct. For the measure of chores, *not applicable* answers were treated as missing data. Indicators for chore input discrepancies were computed by taking the absolute value of the difference for each chore. Chores were scaled to represent a proportion from 0 to 1 to keep this variable on a similar scale to others in the model. Finally, weight-loss maintenance at 18 months was captured by controlling for BMI measured at baseline and 12 months – this controls for BMI change from baseline to 12 months, allowing for a specific examination of weight-loss maintenance from 12 to 18 months. Participants in the treatment condition received the intervention from baseline to six months, and control participants received the intervention after the study ended (six to 12 months), making a common “end point” for weight loss difficult to define. To capture differences in this timing, intervention condition was included as a control in all analyses.

All analyses were conducted using the R package lavaan (Rosseel, 2012) for structural equation modeling (SEM). To account for missingness in weight data at 18 months, full information maximum likelihood (FIML) estimation was used. For each model type (APIM, Common-Fate), there were 24 possible models representing all combinations of environmental structure variables (chaos, stressors, and meal structure), household input variables (chores and fairness), and psychological mediators (eating self-efficacy, exercise self-efficacy, locus of control, and stress). Before testing APIM models, preliminary analyses were conducted using nested chi-square comparison tests to examine distinguishability of paths between primary participants and untreated spouses (i.e. to see if regression coefficients differed by role). Next, nested chi-square comparison tests were used to examine the tenability of setting non-hypothesized paths (e.g., partner psychological mediator to actor BMI) to zero. Prior to specifying common fate models, feasibility was tested by examining within-dyad correlations. Correlations that are not robust (i.e. are lower than .2) indicate that a common fate specification is not tenable (Lederman & Kenny, 2012).

Results

A total of 86 participants (43 couples out of the original 130, 33.1% retention) completed study procedures at 12 months. Reasons for nonparticipation included unable to contact (44.8%), not interested (23.0%), busy or unable to schedule (23.0%), or other (9.2%). Participation was unrelated to condition, $\chi^2(1) = 87$, $p = .35$, sex of primary participant, $\chi^2(1) = .05$, $p = .82$, primary participant age, $B = .01$, $p = .57$, untreated spouse age, $B = .01$, $p = .57$, BMI at the beginning of the trial for primary participants, $B = -.04$, $p = .51$, BMI at the beginning of the trial for untreated spouses, $B = -.02$, $p = .59$, BMI change from baseline to six months for primary participants, $B = -.12$, $p = .31$, and BMI change from baseline to six months for untreated

spouses, *B* = -.06, *p* = .65. Of the couples enrolled in the study, 44.2% had been previously enrolled in the control condition, and 55.8% had been in the treatment condition. Most (72.1%) had not participated in the weight-loss program after the trial concluded. Median household income was high – more than $75,000, and 95.35% of the participants were white (one couple identified as Hispanic/Latinx, and another couple identified as other). Demographic information and descriptives for predictor variables at 12 months are reported in tables 1a (by role) and 1b (by condition).[2]

A total of 57 participants (from 31 couples; 66.3% retention) returned at 18 months. Reasons for nonparticipation included busy or unable to schedule (34.5%), no consent to contact (27.6%), unable to contact (27.6%), and not interested (10.3%). Treatment condition, *B* = .38, *p* = .10, sex, *B* = .11, *p* = .18, or role, *OR* = .11, *p* = .18. Participation was also unrelated to BMI change from baseline to 12 months for primary participants, *B* = -.16, *p* = .35, and untreated spouses, *B* = -.33, *p* = .20, or any study variables at 12 months (chaos, *B* = -.04, *p* = .58; objective stressors, *B* = -.02, *p* = .58; mealtime structure, *B* = -.06, *p* = .26; household chore inputs, *B* = -.00, *p* = .997; perceptions of fairness, *B* = -.00, *p* = .93; eating self-efficacy, *B* = -.02, *p* = .53; exercise self-efficacy, *B* = -.00, *p* = .94; locus of control, *B* = -.09, *p* = .35, and stress, *B* = .07, *p* = .34).

The feasibility of common-fate models was tested by examining actor-partner correlations on predictor variables. Within-dyad correlations between eating self-efficacy, *r* = -.01, *p* = .94, exercise self-efficacy, *r* = -.09, *p* = .58, locus of control, *r* = .12, *p* = .43, and stress, *r* = .01, *p* = .97, were not significant, indicating that common fate models were not tenable

[2] Gender and program participation from six to 12 months differed across role. To ensure that this exclusion did not obscure study results, final models were analyzed with gender and program participation, and can be seen in appendix A and appendix B. Because conclusions were unaltered, these controls were excluded for the sake of parsimony.

in this population. Correlations between focal variables for primary participants and untreated spouses are displayed in tables 2a (by role, within individuals) and 2b (within dyads).

Preliminary Analyses

Tests of distinguishability. Hypothesized paths included actor effects for structure variables predicting psychological mediatiors and BMI at 18 months, actor and partner effects for input variables predicting psychological mediatiors and BMI at 18 months, and actor effects for psychological mediators predicting BMI at 18 months. Actor BMI at baseline and intervention condition were included as controls predicting psychological mediatiors and BMI at 18 months. All possible combinations between household structure variables, partner input variables, and psychological mediators were tested, resulting in 24 total tests of distinguishability. These comparisons tested whether paths differed significantly across role (i.e. primary participant or untreated spouse). Due to the large number of comparison tests and the small sample size, in favor of parsimony, consistent and clear evidence for distinguishability was critical when considering which paths to leave free in the final models.

It was immediately apparent that constraining control variables equal (i.e. BMI and intervention condition) worsened model fit, so these paths were left free. Distinguishability tests for focal paths can be seen in table 3. Constrained models with stress had consistently worse fit, as did models with eating self-efficacy and chaos, fairness and exercise self-efficacy, and models with chores. Patterns for differences in paths from chaos to BMI, environment and inputs to eating self-efficacy, environments and inputs to stress, stress and eating self-efficacy to BMI, fairness to exercise self-efficacy, and chores to BMI were explored. A series of model comparisons revealed that paths from actor chaos to BMI at 18 months differed across role, and paths from meal structure to stress differed across role.

Paths set to zero. Next, the tenability of setting nonhypothesized partner paths (i.e. partner effects for structural variables predicting psychological mediatiors and BMI at 18 months, and partner effects of psychological mediators on BMI at 18 months) to zero was tested for all 24 models. The first nested comparison made it apparent that partner BMI was significantly related to actor BMI at 18 months. Although this was not originally intended as a control variable, it is unsurprising, given that partner BMI at the beginning of a weight-loss intervention can influence participant success (Cornelius, Gettens, & Gorin, 2016).

These comparisons are detailed in table 4. Only models with chaos and exercise self-efficacy tended to have improved fit when partner paths were included. Including partner report of chaos predicting actor exercise self-efficacy significantly improved model fit, so this path was retained in the final model.

Structural Regression Models

Each model was run and interpreted separately, with a total of 24 models encompassing every possible combination of household structure variables, partner input variables, and psychological mediators. To aid interpretation across models, results are presented by hypothesis. Detailed results for models with chaos are displayed in tables 5a (chores) and 5b (fairness). Detailed results for models with objective stressors are displayed in tables 6a (chores) and 6b (fairness), and detailed results for models with mealtime structure are displayed in tables 7a (chores) and 7b (fairness). A full description of model results, including model fit and confidence intervals, can be seen in appendix C.

***Hypothesis 1:* A chaotic home environment will adversely impact weight-loss maintenance and psychological predictors of weight-loss maintenance.** Mixed support was found for this hypothesis. In line with study predictions, as actor report of chaos increased, eating

self-efficacy significantly decreased (chores model: $B = -1.20$ [-1.79, -.61], $p < .001$; fairness model: $B = -1.09$ [-1.74, -.44], $p = .001$), exercise self-efficacy significantly decreased (chores model: $B = -1.20$ [-2.24, -.17], $p = .02$; fairness model: $B = -1.13$ [-2.20, -.06], $p = .04$), and stress significantly increased (chores model: $B = .76$ [.52, 1.00], $p < .001$; fairness model: , $B = .70$ [.45, .96], $p < .001$). Actor report of stressors predicted less perceived internal locus of control (chores model: $B = -.08$ [-.15, -.02], $p < .01$; fairness model: $B = -.08$ [-.14, -.02], $p = .01$). More structure around mealtimes related to higher eating self-efficacy (chores model: $B = .44$ [.21, .67], $p < .001$; fairness model: $B = .43$ [.19, .67], $p < .001$), higher exercise self-efficacy (chores model: $B = .38$ [-.00, .75], $p = .05$; fairness model: $B = .38$ [.00, .76] $p = .05$, greater perceived internal locus of control (chores model: $B = .13$ [.04, .21], $p < .01$; fairness model: $B = .14$ [.06, .23], $p = .001$), and lower stress (for primary participants only – chores model: $B = -.29$ [-.43, -.14], $p < .001$; fairness model: $B = -.29$ [-.44, -.15], $p < .001$).

Counter to study predictions, chaos related to lower BMI at 18 months, although this was significant for untreated spouses only (chores and eating self-efficacy model: $B = -.98$ [-1.59, -.37], $p < .01$; chores and exercise self-efficacy model: $B = -.63$ [-1.31, .05], $p = .07$; chores and locus of control model: $B = -.63$ [-1.29, .04], $p = .06$; chores and stress model: $B = -.77$ [-1.59, .06], $p = .07$; fairness and eating self-efficacy model: $B = -.83$ [-1.54, -.12], $p = .02$). More stressors also related to lower BMI at 18 months (chores and locus of control model: $B = -.14$ [-.31, .02], $p = .10$; fairness and locus of control model: $B = -.15$ [-.33, .02], $p = .09$).

Hypothesis 2a: **Personal chore inputs will adversely impact weight-loss maintenance and psychological predictors of weight-loss maintenance.** Partial support was found for this hypothesis. Actor chore inputs related to BMI at 18 months in one model, such that, as chore

inputs increased, so did BMI at 18 months (chaos and eating self-efficacy model: *B* = 1.66 [-.29, 3.61], *p* = .09). No other effects were found for actor chore inputs.

Hypothesis 2b: **Partner chore inputs will facilitate successful weight-loss maintenance and improve outcomes on psychological predictors of weight-loss maintenance.** Partial support was found for this hypothesis. Partner chore inputs related to eating self-efficacy such that, as partner chore inputs increased, so did eating self-efficacy (chaos model: *B* = 1.80 [.01, 3.59], *p* = .05; stressors model: *B* = 2.17 [.16, 4.18], *p* = .03; meal structure model: *B* = 1.78 [.03, 3.53], *p* = .05). No other effects were found for partner chore inputs.

Hypothesis 2c: **Input discrepancies and a lack of fairness will adversely impact weight-loss maintenance and psychological predictors of weight-loss maintenance.** Mixed support was found for this hypothesis. In line with study predictions, actor report of fairness related to higher eating self-efficacy (stressors model: *B* = .46 [.00, .92], *p* = .05) and lower stress (chaos model: *B* = -.19 [-.38, -.01], *p* = .04; stressors model: *B* = -.34, [-.55, -.13], *p* = .001; meal structure model: *B* = -.28 [-.48, -.09] $p < .01$). Partner report of fairness related to greater perceived internal locus of control (stressors model: *B* = .15 [-.02, .31], *p* = .08).

Counter to study predictions, as chore discrepancy increased, perceived internal locus of control increased (chaos model: *B* = .80 [-.05, 1.65], *p* = .06; meal structure model: *B* = .75 [-.03, 1.53], *p* = .06), stress decreased (chaos model: *B* = -.83 [-1.68, .01], *p* = .05), and BMI at 18 months decreased (chaos and exercise self-efficacy model: *B* = -2.20 [-4.66, .26], *p* = .08; chaos and stress model: *B* = -2.12 [-4.60, .36], *p* = .09; stressors and eating self-efficacy model: *B* = -2.69 [-5.39, .02], *p* = .05; stressors and exercise self-efficacy model: *B* = -2.77[-5.42, -.12], *p* = .04; stressors and locus of control model: *B* = -2.58 [-5.33, .1724], *p* = .07; stressors and stress model: *B* = -2.69 [-5.32, -.06], *p* = .05; meal structure and eating self-efficacy model: *B* = -2.25

[-4.79, .35], $p = .08$; meal structure and exercise self-efficacy model: $B = -2.18$ [-4.66, .29], $p = .08$; meal structure and stress model: $B = -2.18$ [-4.65, .30], $p = .09$). Actor fairness also predicted lower perceived internal locus of control (meal structure model: $B = -.14$ [-.30, .02], $p = .09$).

Hypothesis 3: **Effects of environmental structure and environmental management on weight-loss maintenance will operate in part through known psychological predictors of weight-loss maintenance.** Partial support was found for this hypothesis. Eating self-efficacy predicted lower BMI at 18 months (chaos and chores model: $B = -.22$ [-.35, -.08], $p < .01$; chaos and fairness model: $B = -.18$ [-.32, -.03], $p = .02$; meal structure and chores model: $B = -.14$ [-.29, .01], $p = .07$), and mediated the effect of chaos on BMI at 18 months (chores model: $a*b = .26$ [.05, .47], $p = .02$; fairness model: $a*b = .19$ [-.00, .39], $p = .05$). Eating self-efficacy also mediated the effect of partner chores on BMI at 18 months (chaos model: $a*b = -.39$ [-.84, .07], $p = .10$).

Greater perceived internal locus of control predicted lower BMI at 18 months (chaos and fairness model: $B = -.45$ [-.92, .02], $p = .06$; stressors and chores model: $B = -.46$ [-.95, .03], $p = .07$; stressors and fairness model: $B = -.59$ [-1.13, -.05], $p = .03$). Finally, perceived internal locus of control mediated the effect of stressors on BMI at 18 months (fairness model: $a*b = .05$ [-.01, .10], $p = .10$). Neither exercise self-efficacy nor stress predicted BMI at 18 months.

Discussion

This study examined the effects of household structure and partner inputs on weight-loss maintenance. Mixed support was found for study hypotheses, and effects were not significant across all models. There were some effects of the home environment and household management

on eating self-efficacy, exercise self-efficacy, perceived locus of control, and stress, although not all of these were in the expected direction.

Having a chaotic home environment related to lower eating self-efficacy, whereas more structure around mealtimes was related to higher eating self-efficacy. These findings are in line with research showing a positive relationship between eating family meals, consuming healthier foods, and lower BMI (Berge et al., 2012; Chan & Sobal, 2011; Neumark-Sztainer et al., 2004). A chaotic environment in which family members are rushing around and unable to organize should ostensibly impede the ability to sit down together for a meal. Indeed, a lack of structure challenges the establishment of healthy routines (Rogerson et al., 2016). Evidence for this possibility was demonstrated by a strong, negative correlation between meal structure and chaos for both primary participants and their spouses. Such a reduction in eating self-efficacy when meals are unstructured also suggests that eating self-efficacy may mediate the relationship between a chaotic kitchen and increased consumption (Vartanian et al., 2016).

In contrast to reports of chaos and meal structure, the index of objective stressors was not related to eating self-efficacy. This could be due to the nature of the items included in the measure. Many of these items had to do with challenges facing the family (e.g., trouble with the law, or a job change) that may have reflected broader disruption in daily routine, rather than actual patterns of disorder in the home.

Partner chore inputs and actor report of fairness were also related to eating self-efficacy, although fairness emerged in only one of three models. If a partner had a larger share of household chores, eating self-efficacy increased. This indicates that receiving instrumental partner support could support weight-loss efforts and healthy eating patterns, and stands in contrast to research showing that partner provision of support can lead to negative emotions such

as anger and depression (Shrout et al., 2006). Shrout et al. (2006), however, found negative effects specifically when support was recognized. Because chore inputs were uncorrelated within couples, it is possible that there is a lack of agreement about how much support is being provided. In addition, instrumental support likely functions in a different way than emotional support. Although some have suggested that recognizing one has received emotional support may be interpreted as personal weakness (Shrout et al., 2006), receiving instrumental support may simply create a space in which a person has the ability and time to focus more on positive health behaviors. The idea that receiving instrumental support is not interpreted as a personal weakness is also suggested by the fact that actor report of greater fairness in labor division may also relate to increased eating self-efficacy. Studies should further explore this possibility by assessing actual food intake, rather than solely assessing eating self-efficacy. Instrumental support is likely also interpreted differently than emotional support by the person receiving it. Future research that explores the ways in which people understand and internalize different types of support, as well as circumstances under which different types of support are warranted, would also be informative in this regard.

Both actor and partner reports of chaos impacted exercise self-efficacy, as did structured mealtimes. Specifically, actor chaos related to lower exercise self-efficacy, whereas partner report of chaos related to greater exercise self-efficacy. More structure around mealtimes predicted greater exercise self-efficacy. Chore inputs and fairness did not relate to exercise self-efficacy. The finding for the effect of meal structure is somewhat surprising, given that structured mealtimes and exercise encompass different behavioral domains. Structured mealtimes may be related to more structure in the home in general, however. Indeed, meal structure was significantly, negatively correlated with reports of home chaos. The fact that chore

inputs did not relate to exercise self-efficacy is also hard to explain. It may be that time constraints – a commonly cited barrier to exercise (Cramp & Bray, 2009; Sallis & Hovell, 1990) – related to chores were insufficient to impede ability to exercise, or that, even if exercise was impeded by a lack of time, this effect did not translate to exercise self-efficacy.

The fact that actor perception of chaos in the home negatively impacted exercise self-efficacy supports the idea that household disorder may impede salient cues to exercise (e.g., leaving sneakers in a noticeable place by the door; Lally et al., 2008; 2011). In contrast, partner perception of chaos related to higher exercise self-efficacy. It could be that a partner's perception of a chaotic home, when accounting for the perception of the actor, prompts more exercise by creating an escape by going on a walk or going to the gym. Exercise location, time engaged in exercise, and time spent engaged in household chores were not assessed in this study, so this could not be examined directly. Future research should explore the ways in which household cues and time allotted to exercise and other tasks shape exercise self-efficacy, and could also examine mismatches in reports of structure and the effects of such mismatched perceptions.

Fewer stressors, greater structure around mealtimes, a larger discrepancy in chore inputs were all related to perceiving more internal locus of control (i.e. belief in one's ability to control his or her weight), as were actor and partner report of fairness. Actor report of fairness related to less internal locus of control, and partner report of fairness related to greater internal locus of control. Some of these findings seem intuitive. If mealtimes are structured, this controlled eating environment could bolster a sense of control over one's weight. The reason partner fairness related to internal locus of control is less clear, but may be related to support provision in happy (partner sees labor division as fair) relationships. Including assessments of relationship quality would lend further insight in this regard.

It is unclear why a greater chore discrepancy related to increased internal locus of control. Perhaps compartmentalized distribution of household inputs and clearly designated tasks – such as one person being mostly responsible for chores and the other working more hours, or one person assuming sole responsibility for a set of tasks while the other assumes responsibility for those that remain – narrows focus, increases feelings of control, and reduces feeling "scattered." The fact that actor report of fairness related to reduced locus of control is also in line with these findings (i.e. if labor distribution is fair, there may be less discrepancy, as indicated by a negative correlation between fairness and chore discrepancy). This is purely speculative, however, and should be replicated.

Stress was also impacted by the home environment and by environmental inputs. Across different measures of environmental structure (i.e. chaos and meals), more structure related to lower stress. These findings follows from earlier research showing that chaotic environments have adverse health and mental health outcomes (Gallo & Matthews, 2003). The finding that meal structure related to stress also suggests that there may be reciprocal causality between stress and eating behaviors, although this was significant for primary participants only. Stress can influence eating (Epel et al., 2012; Groesz et al., 2012; O'Connor et al., 2008), but the structure of that eating experience may also influence stress, and it may be that this structure is more important for stress management when an individual is actively interested in weight loss. Longitudinal studies should explore this possibility.

In contrast to chaos and meal structure, the index of daily stressors did not predict stress. Some have argued for a conceptual and measurement distinction between a list of events (i.e. stressors) and stress appraisal (Cohen, Kamarck, & Mermelstein, 1983; Cohen, 1986), and have failed to find a correlation between total number of reported stressful life events and perceived

stress under some circumstances (Cohen et al., 1983). Perhaps the items on the scale used in this study did not adequately capture relevant events, or perhaps these items were not appraised as stressful.

In regards to environmental inputs, a larger chore discrepancy and actor perceptions of greater fairness related to reduced stress. The finding that chore discrepancy is related to lower stress levels mirrors the counterintuitive finding that discrepant inputs relate to increased locus of control, and lend credence to the idea that compartmentalizing chores and allocating tasks may reduce feelings of being “scattered.” It is also noteworthy that actor fairness related most consistently to improved outcomes on stress only, and not on other weight-related measures. Perhaps overall fairness matters for well-being on a more global scale, but does not correspond as closely to specific behavioral domains. Fairness is also a more abstract concept than a direct measure of chore inputs, so it may not have the same, concrete impact on time and daily activities that chore inputs have. The fact that chore inputs and fairness had differing effects across psychological mediators also raises questions about potential differences in the social bases of self-efficacy, control beliefs, and stress, or perceptions of fairness and support provision (including emotional supports).

Discrepancy in household chore inputs was related to weight-loss maintenance, and the direction of this relationship was the opposite of what had been predicted: rather than hindering weight-loss maintenance, a greater discrepancy in household chore inputs seemed to promote successful weight-loss maintenance. This finding seems counter to previous research showing beneficial effects of equal provision and receipt of support (Gleason et al., 2003). It is possible that couples in this study adhered to principles of equity (Gager, 2008), undermining any potentially negative effects of unequal inputs. Recent observations that women’s increased

participation in the workforce has coincided with an increase in BMI of working-age women (Koch & Wilson, 2013) and risk for childhood obesity (Datar, Nicosia, & Shier, 2014; Gwozdz, 2016), along with finding that men in married couples in which the woman is employed are more likely to be obese (Chen, Liu, & Wang, 2014), offer another explanation for the pattern uncovered in this study. Some have suggested that the relationship between women entering the workforce and increasing overweight and obesity are due to sedentary work (Koch & Wilson, 2013) and less time available for physical activity and preparing healthy meals (Datar et al., 2014; Gwozdz, 2016). These effects could spill over to impede health behaviors of spouses. Finally, it is possible that discrepancies were due to couple members completing some of the chores without partner inputs, while the other member of the couple completed the remaining chores. In this situation, it may be that being responsible for a few tasks rather than needing to complete a portion of many tasks contributes to a more organized environment. It would be illuminating to conduct more in-depth research examining ways in which time commitments and labor distribution contribute to the spread of health behaviors within couples. Future research should also consider a direct examination of relevant changes in the home environment, such as the presence of healthy ingredients, in relation to home structure and inputs in managing the home environment.

Greater chaos and stressors predicted more successful weight-loss maintenance. The relationships between chaos and more successful weight-loss maintenance for untreated spouses and between stressors and more successful weight-loss maintenance is also difficult to explain. Contrary to this finding, it was expected that indicators of chaos and disorder would adversely affect weight outcomes. Of note, one previous study (Ryon & Gleason, 2014) found that daily hassles (e.g., partner conflicts or car trouble) could be related to more positive health behaviors,

such as improved diet and exercise. Given the counterintuitive nature of this finding, it would be important to replicate this and explore potential mechanisms in future research before giving much weight to its significance. Finally, actor chores predicted less successful weight-loss maintenance – although this effect was marginally significant in one model only. The finding that actor chore inputs related to higher BMI at 18 months was hypothesized, and indicates that more time dedicated to chores may hinder weight-loss maintenance efforts.

Of the psychological predictors, both greater eating self-efficacy and internal locus of control predicted successful weight-loss maintenance; exercise self-efficacy and stress did not. Further, eating self-efficacy mediated the effect of environmental chaos on weight-loss outcomes, indicating the tenability of study hypotheses: environment can have a direct effect on weight, but can also shape weight-related predictors of weight-loss maintenance.

There are a number of potential reasons that exercise self-efficacy and stress may not have predicted weight-loss maintenance. First, evidence for an association between some of these variables and successful weight-loss maintenance is mixed (Elfhag, & Rössner, 2005). Second, specific to this sample, the fact that half of the participants may have already regained weight in the gap between the end of the intervention and data collection could have reduced the ability to detect weight change, especially given that the most rapid regain tends to occur earlier in the post-intervention period (MacLean et al., 2015). In other words, the effects of these mediators may have already been played out. No matter the reason, these null relationships should be viewed in light of the small sample size, the difficulty defining weight-loss maintenance in this study, and evidence for significant influence in previous studies. These issues should be explored further in larger studies following individuals during and post-weight loss. If larger studies find significant effects for structural rather than psychological variables

predicting weight-loss maintenance, this could have important implications for designing interventions to bolster successful, long-term weight control.

Finally, there was no evidence for shared eating self-efficacy, exercise self-efficacy, perceived locus of control, or stress within couples. This stands in contrast to research showing significant similarities in weight and weight-related behaviors in social groupings (Christakis & Fowler, 2007; De La Haye, Robins, Mohr, & Wilson, 2010; 2011; Fletcher, Bonell, & Sorhaindo, 2011; Hruschka, Brewis, Wutich, & Morin, 2011). Perhaps observable traits, such as exercising twice a week, or behaviors that change the accessibility of relevant items, such as one person cutting out sweets and keeping them out of the house, are more likely to be shared than psychological traits. Although researchers have uncovered considerable evidence for concordance within couples in terms of depression and other aspects of mental health (Meyler, Stimpson, & Peek, 2007), research examining similarities within couples on other psychological traits is lacking. Future research should explore social determinants of efficacy beliefs and similarities within couples in a larger sample.

To summarize, the home environment and management of the home environment can affect psychological determinants of weight-loss maintenance. Results regarding household structure suggest that intervening to increase a person's perception of mealtime structure and reducing chaos may promote successful weight-loss maintenance. In terms of household inputs, intervention implications are less clear. There may be benefits to increasing partner inputs and reducing individual inputs, which would increase chore input discrepancies, promoting weight loss in both couple members (although the person doing fewer chores may experience an even larger benefit). Translating this into practice is difficult, however, as promoting unequal labor distribution seems ethically questionable. Future research examining time allotments, work and

chore labor divisions, and equity versus equality is needed before applying such findings to intervention development.

Limitations

Results should be interpreted in light of study limitations. The sample was small and lacked power, which may have masked significant effects. This likely contributed to the lack of consistent significant effects across models. Further, although there was no evidence for selective attrition, participants may have been less likely to return if they had not maintained weight loss, or if they lived in a more chaotic home, making it hard to schedule a time to come in for a visit. If this was the case, it is possible that relationships between a chaotic environment and weight-loss maintenance could not be captured to a full extent with the returning sample. In addition, the sample was primarily white, middle aged, and high income, and results may not generalize to other populations.

There was also some difficulty defining weight-loss maintenance. Slightly more than half of the couples completed the weight-loss phase of the study at six months and were then measured from 12 to 18 months, whereas the rest of the participants were offered the program between six and 12 months. Because there was no simple solution to this problem – looking at six- to 18-month change in the treatment group and 12- to 18-month change in the other seems more egregious – and any time post-treatment can be considered the maintenance phase, the start- and end-points of data collection were used when defining weight change. Due to the small sample size, it was also not possible to split the sample and examine relationships by study condition. To guard against effects of the intervention and timing in weight-loss maintenance, intervention condition was controlled in all analyses.

Finally, some of the measures were created specifically for this study (i.e. fairness, chore inputs, and objective stressors), so the reliability and validity of these measures is unknown. The fairness measure, however, has strong face validity, and the measure of stressors was adapted using items from existing scales. Although the measure of chore inputs was constructed using tasks that have been used previously when researching household chores (Gager, 2008), spouses' reports were uncorrelated with each other. As such, this measure may have failed to accurately capture chore inputs, or may have been thrown off by other factors such as chore inputs from an outside party (e.g., housekeeper or children) or different interpretations of chores (e.g., doing the dishes reported as zero percent because of the presence of a dishwasher by one couple member).

Conclusion

The structure of the home environment and environmental management within couples can shape psychological factors related to weight-loss maintenance, and may impact weight-loss maintenance in the long term. Reducing household chaos and increasing structure around mealtimes, in particular, may prove beneficial, and is an easier target than larger life stressors (e.g., having a child under two). More attention to the role of labor division is also warranted, including an examination of work and chore trade-offs, time spent in various tasks, and principles of equity versus equality. Understanding the effects of environmental structure and environmental management on healthy cues such as the presence of fruits and vegetables or exercise equipment would also be valuable. In spite of study limitations, these preliminary findings highlight the home environment and social forces within that environment as a potential target for intervention to support sustained weight-loss maintenance in couples.

References

Anderson, P. M. (2012). Parental employment, family routines and childhood obesity. *Economics & Human Biology, 10(*4), 340-351.

Armitage, C. J., Wright, C. L., Parfitt, G., Pegington, M., Donnelly, L. S., & Harvie, M. N. (2014). Self-efficacy for temptations is a better predictor of weight loss than motivation and global self-efficacy: Evidence from two prospective studies among overweight/obese women at high risk of breast cancer. *Patient Education and Counseling*, *95*(2), 254-258.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*(2), 191-215.

Berge, J. M., MacLehose, R. F., Loth, K. A., Eisenberg, M. E., Fulkerson, J. A., & Neumark-Sztainer, D. (2012). Family meals. Associations with weight and eating behaviors among mothers and fathers. *Appetite*, *58*(3), 1128-1135.

Bodenmann, G. (2005). Dyadic coping and its significance for marital functioning. In Revenson T., Kayser K., Bodenmann G. (Eds.), *Couples coping with stress: Emerging perspectives on dyadic coping* (pp. 33–50). Washington DC: American Psychological Association.

Bronfenbrenner, U., & Evans, G. W. (2000). Developmental science in the 21st century: Emerging questions, theoretical models, research designs and empirical findings. *Social Development*, *9*(1), 115-125.

Byrne, S., Barry, D., & Petry, N. M. (2012). Predictors of weight loss success. Exercise vs. dietary self-efficacy and treatment attendance. *Appetite, 58*(2), 695-698.

Carlson, J. A., Sallis, J. F., Conway, T. L., Saelens, B. E., Frank, L. D., Kerr, J., ... & King, A. C. (2012). Interactions between psychosocial and built environment factors in explaining older adults' physical activity. *Preventive Medicine*, *54*(1), 68-73.

Centers for Disease Control and Prevention (CDC). (2015, June 4). How much physical activity do adults need?. Retrieved November 30, 2015, from http://www.cdc.gov/physicalactivity/basics/adults/index.htm.

Chan, J. C., & Sobal, J. (2011). Family meals and body weight. Analysis of multiple family members in family units. *Appetite, 57*(2), 517-524.

Chen, H. J., Liu, Y., & Wang, Y. (2014). Socioeconomic and demographic factors for spousal resemblance in obesity status and habitual physical activity in the United States. *Journal of Obesity, 2014*, 1-11.

Christakis, N. A., & Fowler, J. H. (2007). The spread of obesity in a large social network over 32 years. *New England Journal of Medicine, 357*(4), 370-379.

Clark, M. M., Abrams, D. B., Niaura, R. S., Eaton, C. A., & Rossi, J. S. (1991). Self-efficacy in weight management. *Journal of Consulting and Clinical Psychology, 59*(5), 739-744.

Clark, D. O., & Nothwehr, F. (1999). Exercise self-efficacy and its correlates among socioeconomically disadvantaged older adults. *Health Education & Behavior, 26*(4), 535-546.

Cohen, S. (June 1986). Contrasting the Hassles Scale and the Perceived Stress Scale: Who's really measuring appraised stress?. *American Psychologist*, 717-718.

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, 24(4), 385-396.

Cohen, S., & Williamson, G. (1988). Perceived Stress in a Probability Sample of the United States. Spacapan, S. and Oskamp, S. (Eds.) *The social psychology of health*. Newbury Park, CA: Sage.

Cornelius, T., Gettens, K., & Gorin, A. A. (2016). Dyadic dynamics in a randomized weight loss intervention. *Annals of Behavioral Medicine*, 1-10.

Cramp, A. G., & Bray, S. R. (2009). A prospective examination of exercise and barrier self-efficacy to engage in leisure-time physical activity during pregnancy. *Annals of Behavioral Medicine, 37*(3), 325-334.

Datar, A., Nicosia, N., & Shier, V. (2014). Maternal work and children's diet, activity, and obesity. *Social Science & Medicine, 107*, 196-204.

De la Haye, K., Robins, G., Mohr, P., & Wilson, C. (2010). Obesity-related behaviors in adolescent friendship networks. *Social Networks, 32*(3), 161-167.

De La Haye, K., Robins, G., Mohr, P., & Wilson, C. (2011). Homophily and contagion as explanations for weight similarities among adolescent friends. *Journal of Adolescent Health, 49*(4), 421-427.

Elfhag, K., & Rössner, S. (2005). Who succeeds in maintaining weight loss? A conceptual review of factors associated with weight loss maintenance and weight regain. *Obesity Reviews, 6*(1), 67-85.

Epel, E., Tomiyama, A. J., & Dallman, M. F. (2012). Stress and reward neural networks, eating, and obesity. In K. Brownell & M. S. Gold (Eds.), *Handbook of food and addiction*. Oxford: Oxford University Press.

Evans, G. W., Gonnella, C., Marcynyszyn, L. A., Gentile, L., & Salpekar, N. (2005). The role of chaos in poverty and children's socioemotional adjustment. *Psychological Science*, *16*(7), 560-565.

Flegal, K. M. (2005). Epidemiologic aspects of overweight and obesity in the United States. *Physiology & Behavior, 86*(5), 599-602.

Fletcher, A., Bonell, C., & Sorhaindo, A. (2011). You are what your friends eat: Systematic review of social network analyses of young people's eating behaviours and bodyweight. *Journal of Epidemiology and Community Health*, jech-2010.

Finkelstein, E. A., Khavjou, O. A., Thompson, H., Trogdon, J. G., Pan, L., Sherry, B., & Dietz, W. (2012). Obesity and severe obesity forecasts through 2030. *American Journal of Preventive Medicine, 42*(6), 563-570.

Fryar, C. D., Carroll, M. D., & Ogden, C. L. (September 2014). *Prevalence of overweight, obesity, and extreme obesity among adults: United States, 1960-1962 through 2011-2012*. Retrieved from http://www.cdc.gov/nchs/data/hestat/obesity_adult_11_12/obesity_adult_11_12.htm.

Gager, C. T. (2008). What's fair is fair? Role of justice in family labor allocation decisions. *Marriage & Family Review, 44*(4), 511-545.

Gallo, L. C., & Matthews, K. A. (2003). Understanding the association between socioeconomic status and physical health: Do negative emotions play a role?. *Psychological Bulletin, 129*(1), 10-51.

Gleason, M. E., Iida, M., Bolger, N., & Shrout, P. E. (2003). Daily supportive equity in close relationships. *Personality and Social Psychology Bulletin, 29*(8), 1036-1045.

Golan, R., Schwarzfuchs, D., Stampfer, M. J., & Shai, I. (2010). Halo effect of a weight-loss trial on spouses: the DIRECT-Spouse study. *Public Health Nutrition, 13*(04), 544-549.

Gorin, A. A., Powers, T. A., Koestner, R., Wing, R. R., & Raynor, H. A. (2014). Autonomy support, self-regulation, and weight loss. *Health Psychology, 33*(4), 332-339.

Gorin, A. A., Raynor, H. A., Fava, J., Maguire, K., Robichaud, E., Trautvetter, J., ... & Wing, R. R. (2013). Randomized controlled trial of a comprehensive home environment-focused weight-loss program for adults. *Health Psychology, 32*(2), 128-137.

Gorin, A. A., Wing, R. R., Fava, J. L., Jakicic, J. M., Jeffery, R., West, D. S., Brelje, K., & DiLillo, V. G. (2008). Weight loss treatment influences untreated spouses and the home environment: Evidence of a ripple effect. *International Journal of Obesity, 32*(11), 1678-1684.

Groesz, L. M., McCoy, S., Carl, J., Saslow, L., Stewart, J., Adler, N., Laraia, B., & Epel, E. (2012). What is eating you? Stress and the drive to eat. *Appetite, 58*(2), 717-721.

Gwozdz, W. (2016). Is maternal employment related to childhood obesity?. *IZA World of Labor, 267*, 1-10.

Holmes, T. H., & Rahe, R. H. (1967). The social readjustment rating scale. *Journal of Psychosomatic Research, 11*(2), 213-218.

Hruschka, D. J., Brewis, A. A., Wutich, A., & Morin, B. (2011). Shared norms and their explanation for the social clustering of obesity. *Journal Information, 101*(S1), S295-S300.

Jeffery, R. W., Epstein, L. H., Wilson, G., Drewnowski, A., Stunkard, A. J., & Wing, R. R. (2000). Long-term maintenance of weight loss: Current status. *Health Psychology*, *19*(1, Suppl), 5-16.

Kanner, A. D., Coyne, J. C., Schaefer, C., & Lazarus, R. S. (1981). Comparison of two modes of stress measurement: Daily hassles and uplifts versus major life events. *Journal of Behavioral Medicine, 4*(1), 1-39.

Kenny, D. A., Kashy, D. A., & Cook, W. L. (2006). *Dyadic data analysis*. New York, NY: The Guilford Press.

Klumb, Hoppmann, C., & Staats, M. (2006). Work hours affect spouse's cortisol secretion—For better and for worse. *Psychosomatic Medicine, 68*(5), 742-746.

Koch, T.G., & Wilson, N. (2013). *Decomposing the American obesity epidemic* (Working paper no. 318). Washington, DC: Bureau of Economics Federal Trade Commission. Retrieved from https://www.ftc.gov/sites/default/files/documents/reports/decomposing-american-obesity-epidemic/wp318.pdf.

Lally, P., Chipperfield, A., & Wardle, J. (2008). Healthy habits: Efficacy of simple advice on weight control based on a habit-formation model. *International Journal of Obesity, 32*(4), 700-707.

Lally, P., Wardle, J., & Gardner, B. (2011). Experiences of habit formation: A qualitative study. *Psychology, Health & Medicine, 16*(4), 484-489.

Ledermann, T., & Kenny, D. A. (2012). The common fate model for dyadic data: Variations of a theoretically important but underutilized model. *Journal of Family Psychology, 26(1*), 140-148.

MacLean, P. S., Wing, R. R., Davidson, T., Epstein, L., Goodpaster, B., Hall, K. D., ... & Rothman, A. J. (2015). NIH working group report: Innovative research to improve maintenance of weight loss. *Obesity, 23*(1), 7-15.

Martin-Biggers, J., Spaccarotella, K., Berhaupt-Glickstein, A., Hongu, N., Worobey, J., & Byrd-Bredbenner, C. (2014). Come and get it! A discussion of family mealtime literature and factors affecting obesity risk. *Advances in Nutrition: An International Review Journal, 5*(3), 235-247.

Matheny, A. P., Wachs, T. D., Ludwig, J. L., & Phillips, K. (1995). Bringing order out of chaos: Psychometric characteristics of the confusion, hubbub, and order scale. *Journal of Applied Developmental Psychology*, *16*(3), 429-444.

McLaren, L. (2007). Socioeconomic status and obesity. *Epidemiologic Reviews, 29*(1), 29-48.

Meyler, D., Stimpson, J. P., & Peek, M. K. (2007). Health concordance within couples: A systematic review. *Social Science & Medicine, 64*(11), 2297-2310.

Neumark-Sztainer, D., Wall, M., Story, M., & Fulkerson, J. A. (2004). Are family meal patterns associated with disordered eating behaviors among adolescents?. *Journal of Adolescent Health, 35*(5), 350-359.

O'Connor, D. B., Jones, F., Conner, M., McMillan, B., & Ferguson, E. (2008). Effects of daily hassles and eating style on eating behavior. *Health Psychology, 27*(1S), S20.

Olsen, J. A., & Kenny, D. A. (2006). Structural equation modeling with interchangeable dyads. *Psychological Methods, 11*(2), 127.

Palmeira, A. L., Teixeira, P. J., Branco, T. L., Martins, S. S., Minderico, C. S., Barata, J. T., ... & Sardinha, L. B. (2007). Predicting short-term weight loss using four leading health behavior change theories. *International Journal of Behavioral Nutrition and Physical Activity, 4*(1), 14-25.

Resnick, B., & Jenkins, L. S. (2000). Testing the reliability and validity of the self-efficacy for exercise scale. *Nursing Research, 49*(3), 154-159.

Rogerson, D., Soltani, H., & Copeland, R. (2016). The weight-loss experience: A qualitative exploration. *BMC Public Health, 16*(1), 1-12.

Rosenstock, I. M., Strecher, V. J., & Becker, M. H. (1994). The health belief model and HIV risk behavior change. In R. J. DiClemente & J. L. Peterson (Eds.), *Preventing AIDS* (pp. 5-24). Springer US.

Rosseel, Y. (2012). lavaan: An R package for structural equation modeling. *Journal of Statistical Software, 48*(2), 1-36. URL http://www.jstatsoft.org/v48/i02/.

Ryon, H. S., & Gleason, M. E. (2014). The role of locus of control in daily life. *Personality and Social Psychology Bulletin*, *40*(1), 121-131.

Saelens, B. E., & Handy, S. L. (2008). Built environment correlates of walking: a review. *Medicine and Science in Sports and Exercise*, *40*(7 Suppl), S550.

Sallis, J. F., & Hovell, M. F. (1990). Determinants of exercise behavior. *Exercise and Sport Sciences Reviews, 18*(1), 307-330.

Shrout, P. E., Herman, C. M., & Bolger, N. (2006). The costs and benefits of practical and emotional support on adjustment: A daily diary study of couples experiencing acute stress. *Personal Relationships*, *13*(1), 115-134.

Stotland, S., & Zuroff, D. C. (1990). A new measure of weight locus of control: The Dieting Beliefs Scale. *Journal of Personality Assessment*, *54*(1-2), 191-203.

Van Dyck, D., Cerin, E., Conway, T. L., De Bourdeaudhuij, I., Owen, N., Kerr, J., ... & Sallis, J. F. (2014). Interacting psychosocial and environmental correlates of leisure-time physical activity: A three-country study. *Health Psychology, 33*(7), 699.

Vartanian, L. R., Kernan, K., & Wansink, B. (2016). Clutter, chaos, and overconsumption: The role of mind-set in stressful and chaotic food environments. *Environment and Behavior*, 1-9.

Wadden, T. A., Butryn, M. L., & Byrne, K. J. (2004). Efficacy of lifestyle modification for long-term weight control. *Obesity Research*, *12*(S12), 151S-162S.

Wingo, B. C., Desmond, R. A., Brantley, P., Appel, L., Svetkey, L., Stevens, V. J., & Ard, J. D. (2013). Self-efficacy as a predictor of weight change and behavior change in the PREMIER trial. *Journal of Nutrition Education and Behavior*, *45*(4), 314-321.

	Primary Participant (N = 43)	Untreated Spouse (N = 43)
Sex	69.8% Female	30.2% Female**
Age	54.14 (9.95)	54.65 (9.95)
Program 6-12 Months	1.77 (2.52)	.79 (1.92)*
Baseline BMI	32.85 (3.65)	31.86 (5.43)
12 Month BMI	31.61 (4.21)	31.31 (5.32)
18 Month BMI	30.71 (4.65)	29.83 (4.62)
Chaos	1.75 (.58)	1.78 (.46)
Objective Stressors	4.98 (2.23)	4.74 (1.85)
Mealtime Structure	4.90 (1.40)	5.09 (1.42)
Chore Inputs	.44 (.24)	.42 (.25)
Fairness	2.79 (.86)	2.91 (.67)
Eating Self-Efficacy	5.98 (1.45)	6.47 (2.06)
Exercise Self-Efficacy	5.22 (2.25)	5.11 (2.57)
Perceived Locus of Control	4.39 (.53)	4.40 (.61)
Stress	1.64 (.85)	1.52 (.75)

Table 1a. Baseline demographic information and descriptives for study variables, by role, for all participants returning at 12 months (excepting 18 month BMI, which includes only returning participants). Difference in sex of is reported as a percentage and was examined using chi-square analysis. Other variables are reported as Mean (SD), and were examined using paired t-tests; +$p < .10$, *$p < .05$, **$p < .01$.

	Treatment Condition (*N* = 48)	Control Condition (*N* = 28)
Primary participant sex	66.7% Female	73.7% Female
Age	52.25 (9.73)	57.13 (9.04)
Program 6-12 Months	1.67 (2.53)	.79 (1.83)*
Baseline BMI	32.97 (5.03)	31.58 (3.99)
12 Month BMI	31.91 (5.52)	30.89 (4.08)
18 Month BMI	30.60 (4.92)	29.72 (4.04)
Chaos	1.89 (.55)	1.66 (.48)+
Objective Stressors	5.08 (1.85)	5.08 (2.18)
Mealtime Structure	5.18 (1.49)	4.76 (1.28)
Chore Inputs	.43 (.24)	.43 (25)
Chore Discrepancy	.53 (.23)	.52 (.23)
Fairness	2.93 (.81)	2.76 (.71)
Eating Self-Efficacy	6.16 (1.94)	6.32 (1.61)
Exercise Self-Efficacy	4.67 (2.40)	5.77 (2.29)*
Perceived Locus of Control	4.38 (.53)	4.42 (.62)
Stress	1.61 (.84)	1.54 (.76)

Table 1b. Baseline demographic information and descriptives for study variables, by condition, for all participants returning at 12 months (excepting 18 month BMI, which includes only returning participants). Difference in sex of primary participant is reported as a percentage and was examined using chi-square analysis, given that it is a dyad level variable. (Chore discrepancy was also examined at the dyad level.) Other variables are reported as Mean (SD),

and were examined using multilevel regression to account for dependence within dyads; $+p <$ $.10$, $*p < .05$, $**p < .01$.

	Chaos	*Stressors*	*Meals*	*Chores*	*Disc*	*Fairness*	*Eat*	*Ex*	*Loc*	*Stress*
Chaos	1	.31	-.42**	.30+	.15	-.48**	-.42**	-.12	-.19	.62**
Stressors	.57**	1	-.20	-.13	-.17	-.18	-.04	.05	-.45*	.27+
Meal Structure (Meals)	-.52**	-.37*	1	.14	.18	.15	.31*	.05	.35*	-.41**
Chores	-.20	.08	.15	1	.63**	-.36*	-.17	-.09	.02	.22
Discrepancy (Disc)	-.23	-.14	.06	.43**	1	-.32*	-.02	-.05	.31*	-.02
Fairness	-.10	.02	.23	-.46**	-.17	1	.27+	.11	-.07	-.49**
Eating Self-Efficacy (Eat)	-.31*	.06	.17	.33*	.19	.15	1	.30*	.38*	-.64**
Exercise Self-Efficacy (Ex)	-.07	.10	.17	.02	.09	.11	.42**	1	.22	-.46*
Locus of Control (Loc)	-.10	-.06	.24	.00	.13	.09	.13	.15	1	-.32*
Stress	.42**	.08	-.09	-.13	-.22	-.23	-.43**	-.36*	-.32*	1

Table 2a. Pearson correlations between focal variables by role, within individuals. Primary participants are above the diagonal, untreated spouses are below the diagonal; +p < .10, *p < .05, **p < .01.

Untreated Spouse

		Chaos	*Stressors*	*Meals*	*Chores*	*Disc*	*Fairness*	*Eat*	*Ex*	*Loc*	*Stress*
Primary Participant	*Chaos*	.45**	.36*	-.30+	-.01	.15	-.11	.13	.35*	.01	.05
	Stressors	.37*	.66**	-.26	.14	-.17	-.02	.10	.06	-.01	.07
	Meal Structure (Meals)	-.31*	.07	.44*	.17	.18	.14	.09	-.02	.13	-.02
	Chores	-.14	-.01	.02	-.05	.63**	-.04	.20	.22	.11	-.10
	Discrepancy (Disc)	-.23	-.14	.06	.43**	1	-.17	.19	.09	.13	-.22
	Fairness	-.02	-.16	.19	.04	-.32*	-.14	-.04	-.24	.12	.14
	Eating Self-Efficacy (Eat)	-.16	-.11	.25	.06	-.02	.21	-.01	.10	.01	.05
	Exercise Self-Efficacy (Ex)	.02	-.08	-.06	-.03	-.05	.18	-.10	-.09	.02	.00
	Locus of Control (Loc)	-.23	-.31*	.37*	.21	.31*	.29+	.00	.08	.12	-.16
	Stress	.28+	.34*	-.12	-.05	-.02	-.11	.17	.25	-.09	.01

Table 2b. Pearson correlations between focal variables across dyad members; +$p < .10$, *$p < .05$, **$p < .01$.

Table 3. Detailed results for omnibus tests of distinguishability; +$p < .10$, *$p < .05$, **$p < .01$.

Household Structure	Partner Inputs	Mediators			
		Eating Self-Efficacy	Exercise Self-Efficacy	Locus of Control	Stress
		$\Delta\chi^2$(df)	$\Delta\chi^2$(df)	$\Delta\chi^2$(df)	$\Delta\chi^2$(df)
Chaos	Chore Inputs	23.32 (9)*	16.41 (9)+	16.15 (9)+	15.02 (9)+
	Fairness	13.36 (7)+	16.85 (7)*	11.65 (7)	68.55 (7)**
Stressors	Chore Inputs	19.16 (9)*	7.72 (9)	14.49 (9)	20.56 (9)*
	Fairness	8.07 (7)	7.80 (7)	8.36 (7)	72.68 (7)**
Meal Structure	Chore Inputs	20.69 (9)*	13.10 (9)	10.92 (9)	24.93 (9)**
	Fairness	8.79 (7)	15.24 (7)*	7.40 (7)	75.33 (7)**

Table 4. Detailed results for tests of partner paths set to zero; +p < .10, *p < .05, **p < .01.

	Partner Inputs	Mediators			
		Eating Self-Efficacy	Exercise Self-Efficacy	Locus of Control	Stress
		$\Delta\chi^2$(df)	$\Delta\chi^2$(df)	$\Delta\chi^2$(df)	$\Delta\chi^2$(df)
Chaos	Chore Inputs	4.05 (3)	7.60 (3)+	2.29 (3)	1.52 (3)
	Fairness	2.69 (3)	8.87 (3)*	3.13 (3)	1.33 (3)
Stressors	Chore Inputs	2.83 (3)	1.36 (3)	4.23 (3)	3.38 (3)
	Fairness	2.30 (3)	2.21 (3)	2.62 (3)	3.74 (3)
Meal Structure	Chore Inputs	4.15 (3)	3.90 (3)	4.28 (3)	7.87 (3)*
	Fairness	2.51 (3)	2.37 (3)	3.09 (3)	3.40 (3)

Table 5a. Detailed results for models including chaos and chore inputs. *Mediator* refers to the psychological construct referenced in each column heading, respectively. Where coefficients differ by role, the value for primary participants is presented first, and the value for untreated spouses is included in parentheses; +$p < .10$, *$p < .05$, **$p < .01$.

Outcome	Predictor	Mediators			
		Eating Self-Efficacy	Exercise Self-Efficacy	Locus of Control	Stress
~Mediator	*Actor Baseline BMI*	-.01 (.31*)	.05 (-.07)	.01 (-.05)	-.06 (-.06)
	Actor 12 Month BMI	-.14 (-.45**)	-.11 (.03)	-.02 (.05)	.11* (.12*)
	Partner Baseline BMI	.04 (-.34*)	-.02 (.00)	-.06 (.02)	.09+ (.04)
	Partner 12 Month BMI	-.05 (.33*)	-.03 (.07)	.04 (-.01)	-.09 (-.05)
	Intervention	-.07 (-.72)	.36 (-2.45**)	.14 (-.20)	-.10 (.50**)
	Actor Chaos	-1.20**	-1.20*	-.11	.76**
	Partner Chaos	--	1.39**	--	--
	Actor Chores	1.50	.47	-.25	.45
	Partner Chores	1.80*	.67	-.05	.06
	Chore Discrepancy	-.36	-.03	.80+	-.83+
~BMI at 18 Months	*Actor Baseline BMI*	.01 (-.20*)	-.01 (-.24*)	.00 (-.29**)	.00 (-.25*)
	Actor 12 Month BMI	1.05** (1.15**)	1.11** (1.20**)	1.10** (1.26**)	1.10** (1.20**)
	Partner Baseline BMI	.15 (-.08)	.12 (-.04)	.10 (.01)	.12 (-.03)
	Partner 12 Month BMI	-.39** (.00)	-.35** (-.06)	-.34* (-.09)	-.35* (-.07)
	Intervention	-.38 (-.23)	-.42 (.11)	-.35 (.01)	-.41 (-.03)
	Actor Chaos	-.09 (-.98**)	.25 (-.63+)	.26 (-.63+)	.07 (-.77+)
	Actor Chores	1.66+	.75	.75	.79

Partner Chores	.07	-.47	-.47	-.49
Chore Discrepancy	-2.02	-2.20+	-1.92	-2.12+
Actor Mediator	-.22**	.02	-.35	.10

Table 5b. Detailed results for models including chaos and reports of fairness. *Mediator* refers to the psychological construct referenced in each column heading, respectively. Where coefficients differ by role, the value for primary participants is presented first, and the value for untreated spouses is included in parentheses; +*p* < .10, **p* < .05, ***p* < .01.

Outcome	Predictor	Mediators			
		Eating Self-Efficacy	Exercise Self-Efficacy	Locus of Control	Stress
~Mediator	*Actor Baseline BMI*	.02 (.02*)	.01 (-.09)	.07 (-.02)	-.05 (-.02)
	Actor 12 Month BMI	-.09 (-.47**)	-.05 (.04)	-.06 (.03)	.10+* (.09+)
	Partner Baseline BMI	.04 (-.31*)	.04 (.05)	-.09+ (.01)	.06 (-.02)
	Partner 12 Month BMI	-.05 (.39**)	-.08 (.08)	.07 (-.01)	-.07 (-.01)
	Intervention	-.27 (-.95+)	.22 (-2.58**)	.13 (-.23)	-.10 (.51**)
	Actor Chaos	-1.09**	-1.13*	-.15	.70**
	Partner Chaos	--	1.42**	--	--
	Actor Fairness	.20	.38	-.12	-.19*
	Partner Fairness	.23	.05	.14	.09
~BMI at 18 Months	*Actor Baseline BMI*	-.02 (-.13)	-.06 (-.16)	-.06 (-.22+)	-.03 (-.18)
	Actor 12 Month BMI	1.11** (1.07**)	1.16** (1.11**)	1.14** (1.19**)	1.14** (1.14**)
	Partner Baseline BMI	.18 (-.13)	.18 (-.10)	.13 (-.05)	.18 (-.09)
	Partner 12 Month BMI	-.39* (.05)	-.39* (-.02)	-.35* (-.04)	-.38* (-.03)
	Intervention	-.57 (.01)	-.56 (.30)	-.42 (.17)	-.57 (.14)
	Actor Chaos	.15 (-.83*)	.43 (-.44)	.46 (-.52)	.19 (-.62)
	Actor Fairness	.16	.19	.17	.21
	Partner Fairness	.16	.12	.14	.11

Actor Mediator	-.18*	.03	-.45+	.14

Table 6a. Detailed results for models including objective stressors and chore inputs. *Mediator* refers to the psychological construct referenced in each column heading, respectively. When paths differ across role, the path for the primary participant is reported first, and the path for untreated spouses is reported in parentheses; +*p* < .10, **p* < .05, ***p* < .01.

Outcome	Predictor	Mediators			
		Eating Self-Efficacy	Exercise Self-Efficacy	Locus of Control	Stress
~Mediator	*Actor Baseline BMI*	.03 (.28+)	.11 (.02)	-.03 (-.03)	-.08 (-.04)
	Actor 12 Month BMI	-.21 (-.43**)	-.20 (-.08)	.00 (.03)	.15* (.11+)
	Partner Baseline BMI	-.08 (-.30+)	-.16 (-.00)	-.03 (-.01)	.16* (.03)
	Partner 12 Month BMI	.08 (.32*)	.11 (.12)	.02 (.01)	-.16* (-.05)
	Intervention	.29 (-.43)	.44 (-2.54**)	.13 (-.20)	-.33 (.31)
	Actor Stressors	-.04	.10	-.08**	.04
	Actor Chores	1.33	-.01	-.17	.44
	Partner Chores	2.17*	.86	.20	-.22
	Chore Discrepancy	-.61	.28	.61	-.67
~BMI at 18 Months	*Actor Baseline BMI*	-.04 (-.23*)	-.06 (-.23*)	-.06 (-.29*)	-.05 (-.24+)
	Actor 12 Month BMI	1.10** (1.18**)	1.15** (1.18**)	1.14** (1.25**)	1.15** (1.20**)
	Partner Baseline BMI	.17 (-.06)	.19 (-.05)	.17 (-.01)	.18 (-.04)
	Partner 12 Month BMI	-.41** (-.05)	-.42** (-.06)	-.42** (-.08)	-.42** (-.07)
	Intervention	-.42 (-.02)	-.55 (.18)	-.48 (.01)	-.52 (.10)
	Actor Stressors	-.07	-.11	-.14+	-.09
	Actor Chores	1.74	1.24	1.32	1.27
	Partner Chores	.40	.10	.22	.08

Chore Discrepancy	-2.69*	-2.77*	-2.58+	-2.69*
Actor Mediator	-.12	.03	-.46+	-.02

Table 6b. Detailed results for models including objective stressors and reports of fairness. *Mediator* refers to the psychological construct referenced in each column heading, respectively. When paths differ across role, the path for the primary participant is reported first, and the path for untreated spouses is reported in parentheses; +*p* < .10, **p* < .05, ***p* < .01.

Outcome	Predictor	Mediators			
		Eating Self-Efficacy	Exercise Self-Efficacy	Locus of Control	Stress
~Mediator	*Actor Baseline BMI*	.02 (.31+)	.03 (-.04)	.03 (-.00)	-.03 (-.01)
	Actor 12 Month BMI	-.11 (-.44**)	-.12 (-.02)	-.03 (.01)	.10 (.08)
	Partner Baseline BMI	-.03 (-.27)	-.06 (.10)	-.07 (-.01)	.09 (-.04)
	Partner 12 Month BMI	.02 (.38*)	.02 (.07)	.05 (.02)	-.10 (-.01)
	Intervention	-.02 (-.77)	.32 (-2.66**)	.12 (-.25)	-.25 (.41*)
	Actor Stressors	-.01	.10	-.08*	.05
	Actor Fairness	.46*	.48	-.08	-.34**
	Partner Fairness	.29	-.19	.15+	.08
~BMI at 18 Months	*Actor Baseline BMI*	-.09 (-.16)	-.12 (-.15)	-.15 (-.21)	-.11 (-.17)
	Actor 12 Month BMI	1.18** (1.09**)	1.23** (1.09**)	1.22** (1.17**)	1.21** (1.11**)
	Partner Baseline BMI	.24+ (-.14)	.27+ (-.12)	.24+ (-.07)	.25+ (-.11)
	Partner 12 Month BMI	-.45** (.03)	-.47** (.01)	-.46** (-.01)	-.45** (-.01)
	Intervention	-.66 (.14)	-.74 (.30)	-.65 (.10)	-.69 (.20)
	Actor Stressors	-.07	-.09	-.15+	-.09
	Actor Fairness	.23	.23	.21	.25
	Partner Fairness	.16	.15	.19	.13
	Actor Mediator	-.11	.03	-.59*	.08

Table 7a. Detailed results for models including mealtime structure and chore inputs. *Mediator* refers to the psychological construct referenced in each column heading, respectively. When paths differ across role, the path for the primary participant is reported first, and the path for untreated spouses is reported in parentheses; +$p < .10$, *$p < .05$, **$p < .01$.

Outcome	Predictor	Mediators			
		Eating Self-Efficacy	Exercise Self-Efficacy	Locus of Control	Stress
~Mediator	*Actor Baseline BMI*	.09 (.42**)	.08 (.76)	.02 (-.01)	-.12* (-.06)
	Actor 12 Month BMI	-.26* (-.55**)	-.19 (-.22)	-.04 (.01)	.19** (.13*)
	Partner Baseline BMI	.02 (-.30*)	-.01 (-.04)	-.04 (.02)	.10+ (.01)
	Partner 12 Month BMI	-.03 (.33*)	-.04 (.16)	.01 (-.01)	-.10 (-.04)
	Intervention	.12 (-.81)	.23 (-2.91**)	.12 (-.28)	-.23 (.38+)
	Actor Meal Structure	.44**	.38+	.13**	-.29** (-.09)
	Actor Chores	.97	-.10	-.33	.58
	Partner Chores	1.78*	.95	-.10	-.07
	Chore Discrepancy	-.61	-.02	.75+	-.62
~BMI at 18 Months	*Actor Baseline BMI*	-.01 (-.21+)	-.01 (-.25*)	-.00 (-.29*)	-.01 (-.25*)
	Actor 12 Month BMI	1.06** (1.16**)	1.11** (1.20**)	1.10** (1.25**)	1.11** (1.20**)
	Partner Baseline BMI	.16 (-.04)	.16 (-.02)	.14 (.01)	.16 (-.02)
	Partner 12 Month BMI	-.41** (-.05)	-.40** (-.09)	-.39** (-.10)	-.40** (-.09)
	Intervention	-.31 (-.06)	-.42 (.13)	-.36 (.05)	-.41 (.09)
	Actor Meal Structure	.10	.07	.08	.07
	Actor Chores	1.47	.90	.84	.91
	Partner Chores	.03	-.38	-.43	-.38

Chore Discrepancy	-2.25+	-2.18+	-1.92	-2.18+
Actor Mediator	-.14+	.01	-.32	-.00

Table 7b. Detailed results for models including mealtime structure and reports of fairness. *Mediator* refers to the psychological construct referenced in each column heading, respectively. When paths differ across role, the path for the primary participant is reported first, and the path for untreated spouses is reported in parentheses; +$p < .10$, *$p < .05$, **$p < .01$.

Outcome	Predictor	Mediators			
		Eating Self-Efficacy	Exercise Self-Efficacy	Locus of Control	Stress
~Mediator	*Actor Baseline BMI*	.07 (.42*)	.00 (.09)	.08 (.01)	-.08 (-.01)
	Actor 12 Month BMI	-.18+ (-.55**)	-.12 (-.15)	-.09* (-.01)	.16** (.07)
	Partner Baseline BMI	.06 (-.27)	.07 (.06)	-.07 (.01)	.04 (-.06)
	Partner 12 Month BMI	-.08 (.38**)	-.11 (.11)	.04 (-.01)	-.04 (.01)
	Intervention	-.08 (-1.05+)	.20 (-2.97**)	.14 (-.29)	-.21 (.39)
	Actor Meal Structure	.43**	.38*	.14**	-.29** (-.06)
	Actor Fairness	.31	.36	-.14+	-.28**
	Partner Fairness	.15	-.32	.10	.13
~BMI at 18 Months	*Actor Baseline BMI*	-.05 (-.16)	-.06 (-.20)	-.04 (-.25+)	-.06 (-.20)
	Actor 12 Month BMI	1.13** (1.10**)	1.17** (1.14**)	1.14** (1.20**)	1.16** (1.14)
	Partner Baseline BMI	.22 (-.10)	.22 (-.08)	.19 (-.03)	.21 (-.08)
	Partner 12 Month BMI	-.43** (.00)	-.43** (-.05)	-.41** (-.07)	-.42** (-.05)
	Intervention	-.57 (.15)	-.65 (.32)	-.54 (.22)	-.61 (.25)
	Actor Meal Structure	.06	-.00	.03	.02
	Actor Fairness	.18	.20	.16	.20
	Partner Fairness	.14	.11	.12	.10
	Actor Mediator	-.12	.02	-.42	.06

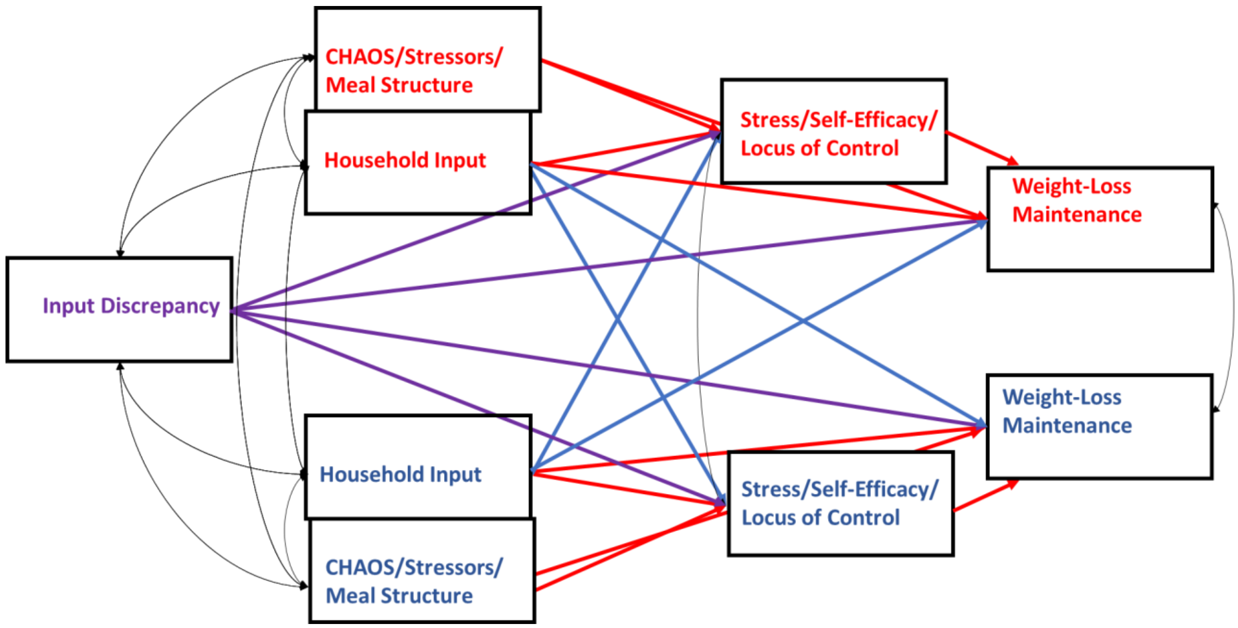

Figure 1. Illustration of the APIM applied to study hypotheses, using actual household inputs (rather than fairness). Couple-level paths are drawn in purple. Actor paths are drawn in red, and partner paths are drawn in blue. Covariances are included as curved lines.

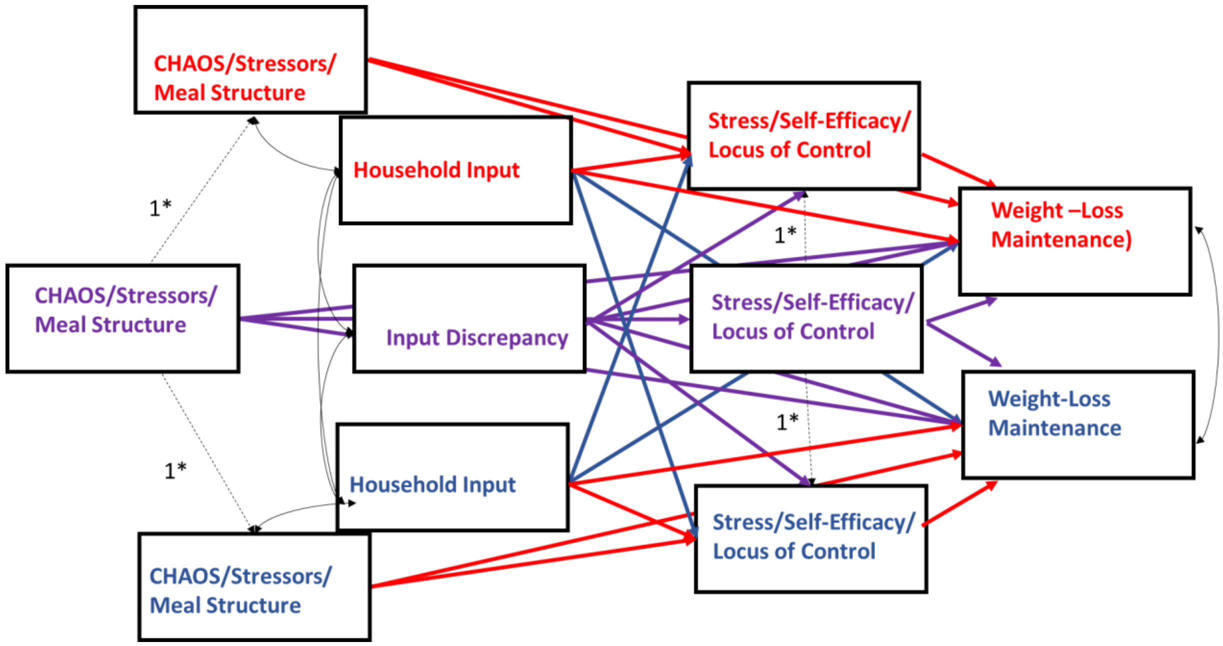

Figure 2. Illustration of the CFM applied to study hypotheses, using actual household inputs (rather than fairness). Paths fixed to one to create couple-level variables are denoted by 1*. Couple-level paths are drawn in purple. Actor paths are drawn in red, and partner paths are drawn in blue. Covariances are included as curved lines.

Appendix A.

Table 1a. Focal paths for final models including chaos and chore inputs when gender is included as a control variable. *Mediator* refers to the psychological construct referenced in each column heading, respectively. Where coefficients differ by role, the value for primary participants is presented first, and the value for untreated spouses is included in parentheses; +p < .10, *p < .05, **p < .01.

Outcome	Predictor	Mediators			
		Eating Self-Efficacy	Exercise Self-Efficacy	Locus of Control	Stress
~Mediator	*Actor Chaos*	-1.16**	-1.05*	-.10	.72**
	Partner Chaos	--	1.25*	--	--
	Actor Chores	1.86*	1.06	-.17	.14
	Partner Chores	1.50+	.12	-.11	.27
	Chore Discrepancy	-.19	-.01	.80+	-.88*
~BMI at 18 Months	*Actor Chaos*	-.12 (-.94**)	.24 (-.59+)	.18 (-.62+)	.22 (-.52)
	Actor Chores	1.62	.67	.78	.78
	Partner Chores	.26	-.07	-.16	-.03
	Chore Discrepancy	-2.38+	-2.70*	-2.38+	-2.73*
	Actor Mediator	-.19**	.05	-.27	-.11

Table 1b. Focal paths for final models including chaos and reports of fairness when gender is included as a control variable. *Mediator* refers to the psychological construct referenced in each column heading, respectively. Where coefficients differ by role, the value for primary participants is presented first, and the value for untreated spouses is included in parentheses; +*p* < .10, **p* < .05, ***p* < .01.

Outcome	Predictor	Mediators			
		Eating Self-Efficacy	Exercise Self-Efficacy	Locus of Control	Stress
~Mediator	*Actor Chaos*	-1.04**	-1.00+	-.14	.67**
	Partner Chaos	--	1.32*	--	--
	Actor Fairness	.11	.31	-.15+	-.13
	Partner Fairness	.32	.20	.18*	.03
	Actor Chaos	-.01 (-.74*)	.28 (-.36)	.23 (-.44)	.16 (-.41)
	Actor Fairness	.24	.29	.25	.27
	Partner Fairness	.09	.04	.07	.05
	Actor Mediator	-.15*	.05	-.32	-.01

Table 2a. Detailed results for models including objective stressors and chore inputs when gender is included as a control variable. *Mediator* refers to the psychological construct referenced in each column heading, respectively. Where coefficients differ by role, the value for primary participants is presented first, and the value for untreated spouses is included in parentheses; +*p* < .10, **p* < .05, ***p* < .01.

Outcome	Predictor	Mediators			
		Eating Self-Efficacy	Exercise Self-Efficacy	Locus of Control	Stress
~Mediator	*Actor Stressors*	-.04	.13	-.08**	.04
	Actor Chores	1.75+	.84	-.09	.12
	Partner Chores	1.80+	.03	.15	.07
	Chore Discrepancy	-.44	.35	.63	-.73
~BMI at 18 Months	*Actor Stressors*	-.10	-.15+	-.15+	-.11
	Actor Chores	1.51	1.07	1.27	1.15
	Partner Chores	.67	.74	.64	.59
	Chore Discrepancy	-3.24*	-3.56**	-3.14*	-3.34*
	Actor Mediator	-.08	.07	-.39	-.18

Table 2b. Detailed results for models including objective stressors and reports of fairness when gender is included as a control variable. *Mediator* refers to the psychological construct referenced in each column heading, respectively. Where coefficients differ by role, the value for primary participants is presented first, and the value for untreated spouses is included in parentheses; +$p < .10$, *$p < .05$, **$p < .01$.

Outcome	Predictor	Mediators			
		Eating Self-Efficacy	Exercise Self-Efficacy	Locus of Control	Stress
~Mediator	*Actor Stressors*	-.02	.11	-.08**	.05
	Actor Fairness	.35	.35	-.13	-.27*
	Partner Fairness	.39	.03	.19*	.00
~BMI at 18 Months	*Actor Stressors*	-.07	-.11	-.14+	-.08
	Actor Fairness	.33	.35	.31	.32
	Partner Fairness	.08	.07	.12	.07
	Actor Mediator	-.08	.07	-.45+	-.05

Table 3a. Detailed results for models including mealtime structure and chore inputs when gender is included as a control variable. *Mediator* refers to the psychological construct referenced in each column heading, respectively. Where coefficients differ by role, the value for primary participants is presented first, and the value for untreated spouses is included in parentheses; +*p* < .10, **p* < .05, ***p* < .01.

Outcome	Predictor	Mediators			
		Eating Self-Efficacy	Exercise Self-Efficacy	Locus of Control	Stress
~Mediator	*Actor Meal Structure*	.40**	.34+	.13**	-.23** (-.09)
	Actor Chores	1.31	.64	-.30	.29
	Partner Chores	1.56+	.29	-.12	.16
	Chore Discrepancy	-.48	-.05	.74+	-.68
~BMI at 18 Months	*Actor Meal Structure*	.15	.12	.14	.10
	Actor Chores	1.11	.55	.60	.69
	Partner Chores	.13	-.10	-.19	-.00
	Chore Discrepancy	-2.60*	-2.59*	-2.33+	-2.64*
	Actor Mediator	-.11	.04	-.24	-.15

Table 3b. Detailed results for models including mealtime structure and reports of fairness when gender is included as a control variable. *Mediator* refers to the psychological construct referenced in each column heading, respectively. Where coefficients differ by role, the value for primary participants is presented first, and the value for untreated spouses is included in parentheses; +$p < .10$, *$p < .05$, **$p < .01$.

Outcome	Predictor	Mediators			
		Eating Self-Efficacy	Exercise Self-Efficacy	Locus of Control	Stress
~Mediator	*Actor Meal Structure*	.40**	.35+	.13**	-.25** (-.06)
	Actor Fairness	.24	.27	-.16+	-.23*
	Partner Fairness	.23	-.13	.14	.07
~BMI at 18 Months	*Actor Meal Structure*	.10	.03	.07	.05
	Actor Fairness	.27	.30	.25	.27
	Partner Fairness	.05	.02	.04	.04
	Actor Mediator	-.10	.04	-.29	-.06

Appendix B.

Table 1a. Focal paths for final models including chaos and chore inputs when participation in a structured weight-loss program post-intervention is included as a control variable. *Mediator* refers to the psychological construct referenced in each column heading, respectively. Where coefficients differ by role, the value for primary participants is presented first, and the value for untreated spouses is included in parentheses; +p < .10, *p < .05, **p < .01.

Outcome	Predictor	Mediators			
		Eating Self-Efficacy	Exercise Self-Efficacy	Locus of Control	Stress
~Mediator	*Actor Chaos*	-1.21**	-1.17*	-.09	.74**
	Partner Chaos	--	1.45**	--	--
	Actor Chores	1.56	.41	-.29	.49
	Partner Chores	1.94*	.32	-.18	.19
	Chore Discrepancy	-.55	-.10	.80+	-.82+
~BMI at 18 Months	*Actor Chaos*	-.09 (-.98**)	.25 (-.70+)	.25 (-.67*)	.04 (-.88+)
	Actor Chores	1.70+	.79	.77	.84
	Partner Chores	.14	-.57	-.54	-.63
	Chore Discrepancy	-2.09	-2.27+	-1.95	-2.19
	Actor Mediator	-.22**	.02	-.33	.13

Table 1b. Focal paths for final models including chaos and reports of fairness when participation in a structured weight-loss program post-intervention is included as a control variable. *Mediator* refers to the psychological construct referenced in each column heading, respectively. Where coefficients differ by role, the value for primary participants is presented first, and the value for untreated spouses is included in parentheses; +$p < .10$, *$p < .05$, **$p < .01$.

Outcome	Predictor	Mediators			
		Eating Self-Efficacy	Exercise Self-Efficacy	Locus of Control	Stress
~Mediator	*Actor Chaos*	-1.04**	-1.02+	-.12	.65**
	Partner Chaos	--	1.49**	--	--
	Actor Fairness	.26	.50	-.09	-.23*
	Partner Fairness	.25	.13	.16+	.08
	Actor Chaos	.11 (-.71*)	.37 (-.37)	.40 (-.36)	.20 (-.50)
	Actor Fairness	.15	.15	.13	.16
	Partner Fairness	.10	.08	.08	.08
	Actor Mediator	-.20*	.02	-.46+	.09

Table 2a. Detailed results for models including objective stressors and chore inputs when participation in a structured weight-loss program post-intervention is included as a control variable. *Mediator* refers to the psychological construct referenced in each column heading, respectively. Where coefficients differ by role, the value for primary participants is presented first, and the value for untreated spouses is included in parentheses; +p < .10, *p < .05, **p < .01.

Outcome	Predictor	Mediators			
		Eating Self-Efficacy	Exercise Self-Efficacy	Locus of Control	Stress
~Mediator	*Actor Stressors*	-.05	.14	-.08*	.03
	Actor Chores	1.38	-.09	-.20	.51
	Partner Chores	2.24*	.45	.10	-.03
	Chore Discrepancy	-.85	.22	.62	-.64
~BMI at 18 Months	*Actor Stressors*	-.07	-.11	-.14+	-.09
	Actor Chores	1.74	1.20	1.25	1.23
	Partner Chores	.55	.11	.27	.08
	Chore Discrepancy	-2.51+	-2.66+	-2.39	-2.57+
	Actor Mediator	-.14+	.03	-.48+	-.03

Table 2b. Detailed results for models including objective stressors and reports of fairness when participation in a structured weight-loss program post-intervention is included as a control variable. *Mediator* refers to the psychological construct referenced in each column heading, respectively. Where coefficients differ by role, the value for primary participants is presented first, and the value for untreated spouses is included in parentheses; +p < .10, *p < .05, **p < .01.

Outcome	Predictor	Mediators			
		Eating Self-Efficacy	Exercise Self-Efficacy	Locus of Control	Stress
~Mediator	*Actor Stressors*	.01	.14	-.07*	.04
	Actor Fairness	.52*	.59	-.06	-.37**
	Partner Fairness	.33	-.12	.17*	.05
~BMI at 18 Months	*Actor Stressors*	-.05	-.09	-.15+	-.08
	Actor Fairness	.19	.18	.16	.19
	Partner Fairness	.08	.10	.13	.08
	Actor Mediator	-.14+	.03	-.60*	.05

Table 3a. Detailed results for models including mealtime structure and chore inputs when participation in a structured weight-loss program post-intervention is included as a control variable. *Mediator* refers to the psychological construct referenced in each column heading, respectively. Where coefficients differ by role, the value for primary participants is presented first, and the value for untreated spouses is included in parentheses; +$p < .10$, *$p < .05$, **$p < .01$.

Outcome	Predictor	Mediators			
		Eating Self-Efficacy	Exercise Self-Efficacy	Locus of Control	Stress
~Mediator	*Actor Meal Structure*	.47**	.38+	.14**	-.32** (-.09)
	Actor Chores	.95	-.10	-.39	.68+
	Partner Chores	1.61+	.95	-.28	.23
	Chore Discrepancy	-.83	-.02	.75+	-.52
~BMI at 18 Months	*Actor Meal Structure*	.10	.07	.07	.06
	Actor Chores	1.53	.90	.80	.90
	Partner Chores	.26	-.38	-.39	-.36
	Chore Discrepancy	-2.11	-2.18+	-1.75	-2.07
	Actor Mediator	-.16*	.01	-.34	-.01

Table 3b. Detailed results for models including mealtime structure and reports of fairness when participation in a structured weight-loss program post-intervention is included as a control variable. *Mediator* refers to the psychological construct referenced in each column heading, respectively. Where coefficients differ by role, the value for primary participants is presented first, and the value for untreated spouses is included in parentheses; +p < .10, *p < .05, **p < .01.

Outcome	Predictor	Mediators			
		Eating Self-Efficacy	Exercise Self-Efficacy	Locus of Control	Stress
~Mediator	*Actor Meal Structure*	.45**	.40*	.15**	-.30** (-.05)
	Actor Fairness	.36+	.48	-.12	-.32**
	Partner Fairness	.19	-.27	.13	.09
~BMI at 18 Months	*Actor Meal Structure*	.06	-.01	.02	.01
	Actor Fairness	.15	.14	.11	.15
	Partner Fairness	.06	.05	.05	.05
	Actor Mediator	-.16*	.01	-.43+	.02

Appendix C.

Chaos, Chores, and Eating Self-Efficacy

The final model exhibited close fit, $\chi^2(14) = 18.20$, $p = .20$, and accounted for 34% of the variance in primary participant eating self-efficacy, 41% of the variance in untreated spouse eating self-efficacy, 93% of the variance in primary participant BMI at 18 months, and 97% of the variance in untreated spouse BMI at 18 months.

Actor chaos predicted eating self-efficacy, $B = -1.20$ [-1.79, -.61], $p < .001$, such that greater chaos related to lower eating self-efficacy. Actor chore inputs did not predict eating self-efficacy, $B = 1.50$ [-.34, 3.34], $p = .11$, however, partner chore inputs did, $B = 1.80$ [.01, 3.59], $p = .05$. As partner chore inputs increased, so did actor eating self-efficacy. Chore discrepancy score did not predict eating self-efficacy, $B = -.36$ [-2.49, 1.78], $p = .74$.

Actor chaos did not predict BMI at 18 month for primary participants, $B = -.09$ [-.77, .59], $p = .79$, but did for partners, $B = -.98$ [-1.59, -.37], $p < .01$, such that, as chaos increased, BMI decreased. Actor chore inputs marginally predicted BMI at 18 months, $B = 1.66$ [-.29, 3.61], $p = .09$, partner chore inputs did not, $B = .07$ [-1.84, 1.98], $p = .94$. As actor chore inputs increased, BMI also increased. Chore discrepancy score did not predict BMI at 18 months, $B = -2.02$ [-4.53, .49], $p = .12$. Higher actor eating self-efficacy predicted lower BMI at 18 months, $B = -.22$ [-.35, -.08], $p < .01$.

The mediated effect of chaos on BMI at 18 months through eating self-efficacy was significant, $a*b = .26$ [.05, .47], $p = .02$, and the total effect was not significant for primary participants, $a*b+c = .17$ [-.50, .83], $p = .62$, but was for untreated spouses, $a*b+c = -.72$ [-1.31, -.14], $p = .02$. The mediated effect of partner chore inputs on BMI at 18 months was marginally significant, $a*b = -.39$ [-.84, .07], $p = .10$, but the total effect was not, $a*b+c = -.31$ [-2.23, 1.60], $p = .75$.

Chaos, Chores, and Exercise Self-Efficacy

The final model exhibited close fit, $\chi^2(13) = 10.00$, *p* = .69, and accounted for 12% of the variance in primary participant exercise self-efficacy, 38% of the variance in untreated spouse exercise self-efficacy, 94% of the variance in primary participant BMI at 18 months and 97% of the variance in untreated spouse BMI at 18 months.

Actor chaos, *B* = -1.20 [-2.24, -.17], *p* = .02, and partner chaos, *B* = 1.39 [.38, 2.40], *p* < .01, predicted exercise self-efficacy. As actor chaos increased, exercise self-efficacy decreased. In contrast, as partner chaos increased, exercise self-efficacy increased. Actor chore inputs, *B* = .47 [-2.29, 3.23], *p* = .74, partner chore inputs, *B* = .67 [-2.13, 3.47], *p* = .64, and chore discrepancy score, *B* = -.03 [-3.34, 3.27], *p* = .98, did not predict exercise self-efficacy.

Actor chaos did not predict BMI at 18 month for primary participants, *B* = .25 [-.52, 1.01], *p* = .53, but marginally did for untreated spouses, *B* = -.63 [-1.31, .05], *p* = .07, such that, as chaos increased, BMI decreased. Actor chore inputs, *B* = .75 [-1.13, 2.63], *p* = .43, and partner chore inputs, *B* = -.47 [-2.36, 1.43], *p* = .63, did not predict BMI at 18 months. Chore discrepancy score was marginally related to BMI at 18 months, *B* = -2.20 [-4.66, .26], *p* = .08. As chore discrepancy increased, BMI at 18 months decreased. Actor exercise self-efficacy did not predict BMI at 18 months, *B* = .02 [-.07, .12], *p* = .64.

Chaos, Chores, and Perceived Locus of Control

The final model exhibited close fit, $\chi^2(14) = 8.76$, *p* = .85, and accounted for 20% of the variance in primary participant perceived locus of control, 13% of the variance in untreated spouse perceived locus of control, 94% of the variance in primary participant BMI at 18 months, and 97% of the variance in untreated spouse BMI at 18 months.

Actor chaos did not predict perceived locus of control, *B* = -.11 [-.33, .12], *p* = .35; neither did actor chore inputs, *B* = -.25 [-.95, .46], *p* = .49, or partner chore inputs, *B* = -.05 [-.74, .63], *p* = .88. Chore discrepancy score marginally did, *B* = .80 [-.05, 1.65], *p* = .06. As chore discrepancy increased, participants' belief in controllability of weight also increased.

Actor chaos did not predict BMI at 18 month for primary participants, *B* = .26 [-.44, .96], *p* = .46, but marginally did for untreated spouses, *B* = -.63 [-1.29, .04], *p* = .06, such that, as chaos increased, BMI decreased. Actor chore inputs, *B* = .75 [-1.16, 2.65], *p* = .44, partner chore inputs, *B* = -.47 [-2.40, 1.46], *p* = .63, chore discrepancy score, *B* = -1.92 [-4.45, .61], *p* = .14, and actor perceived locus of control, *B* = -.35 [-.79, .10], *p* = .13, did not predict BMI at 18 months.

Chaos, Chores, and Stress

The final model exhibited close fit, $\chi^2(14) = 9.07$, *p* = .83, and accounted for 52% of the variance in primary participant stress, 48% of the variance in untreated spouse stress, 94% of the variance in primary participant BMI at 18 months, and 97% of the variance in untreated spouse BMI at 18 months.

Actor chaos predicted stress, *B* = .76 [.52, 1.00], *p* < .001, such that, as chaos increased, stress also increased. Actor chore inputs, *B* = .46 [-.27, 1.17], *p* = .22, and partner chore inputs, *B* = .06 [-.67, .79], *p* = .87, did not. As chore discrepancy score increased, stress had a marginally significant decreased, *B* = -.83 [-1.68, .01], *p* = .05.

Actor chaos did not predict BMI at 18 month for primary participants, *B* = .07 [-.82, .95], *p* = .88, but marginally did for untreated spouses, *B* = -.77 [-1.59, .06], *p* = .07, such that, as chaos increased, BMI decreased. Actor chore inputs, *B* = .79 [-1.08, 2.67], *p* = .41, and partner chore inputs, *B* = -.49 [-2.40, 1.42], *p* = .61, did not predict BMI at 18 months. Chore

discrepancy score was marginally associated with BMI at 18 months, *B* = -2.12 [-4.60, .36], *p* = .09. As chore discrepancy increased, BMI at 18 months decreased. Actor stress did not predict BMI at 18 months, *B* = .10 [-.33, .54], *p* = .65,

Chaos, Fairness, and Eating Self-Efficacy

The final model exhibited close fit, $\chi^2(12) = 16.89$, *p* = .15, and accounted for 33% of the variance in primary participant eating self-efficacy, 33% of the variance in untreated spouse eating self-efficacy, 92% of the variance in primary participant BMI at 18 months, and 97% of the variance in untreated spouse BMI at 18 months.

Actor chaos predicted eating self-efficacy, *B* = -1.09 [-1.74, -.44], *p* = .001, such that higher chaos predicted lower eating self-efficacy. Actor report of fairness, *B* = .20 [-.26, .67], *p* = .39, and partner report of fairness, *B* = .23 [-.22, .69], *p* = .32, did not.

Actor chaos did not predict BMI at 18 month for primary participants, *B* = .15 [-.65, ,94], *p* = .72, but did for untreated spouses, *B* = -.83 [-1.54, -.12], *p* = .02, such that, as chaos increased, BMI decreased. Actor report of fairness, *B* = .16 [-.26, .58], *p* = .45, and partner report of fairness, *B* = .16 [-.25, .58], *p* = .44, did not predict BMI at 18 months. As actor eating self-efficacy increased, BMI at 18 months decreased, *B* = -.18 [-.32, -.03], *p* = .02.

The mediated effect of chaos on BMI at 18 months through eating self-efficacy was marginally significant, *a**b* = .19 [-.00, .39], *p* = .05, and the total effect was not significant for primary participants, $a*b+c$ = .34 [-.44, 1.12], *p* = .39, but was marginally significant for untreated spouses, $a*b+c$ = -.64 [-1.31, .04], *p* = .06.

Chaos, Fairness, and Exercise Self-Efficacy

The final model exhibited close fit, $\chi^2(11) = 16.09$, *p* = .14, and accounted for 16% of the variance in primary participant exercise self-efficacy, 39% of the variance in untreated spouse

exercise self-efficacy, 92% of the variance in primary participant BMI at 18 months, and 96% of the variance in untreated spouse BMI at 18 months.

Actor chaos, B = -1.13 [-2.20, -.06], p = .04, and partner chaos, B = 1.42 [.37, 2.48], p < .01, predicted exercise self-efficacy. As actor chaos increased, exercise self-efficacy decreased. In contrast, as partner chaos increased, exercise self-efficacy increased. Actor report of fairness, B = .38 [-.35, 1.11], p = .30, and partner report of fairness, B = .05 [-.65, .75], p = .89, did not predict exercise self-efficacy.

Actor chaos did not predict BMI at 18 month for primary participants, B = .43 [-.44, 1.30], p = .33, or for untreated spouses, B = -.44 [-1.16, .28], p = .23. Actor report of fairness, B = .19 [-.25, .63], p = .41, partner report of fairness, B = .12 [-.31, .56], p = .58, and actor exercise self-efficacy, B = .03 [-.07, .13], p = .60, did not predict BMI at 18 months.

Chaos, Fairness, and Perceived Locus of Control

The final model exhibited close fit, $\chi^2(12) = 16.62$, p = .17, and accounted for 20% of the variance in primary participant perceived locus of control, 11% of the variance in untreated spouse perceived locus of control, 93% of the variance in primary participant BMI at 18 months, and 96% of the variance in untreated spouse BMI at 18 months.

Actor chaos, B = -.15 [-.39, .08], p = .20, actor report of fairness, B = -.12 [-.30, .08], p = .21, and partner report of fairness, B =.14 [-.03, .31], p = .11, did not predict perceived locus of control.

Actor chaos did not predict BMI at 18 month for primary participants, B = .42 [-.36, 1.20], p = .29, or for untreated spouses, B = -.49 [-1.20, .23], p = .18. Actor report of fairness, B = .16 [-.27, .60], p = .46, and partner report of fairness, B = .13 [-.30, .56], p = .54, did not predict BMI at 18 months. Actor perceived locus of control was marginally related to BMI at 18

months, *B* = -.45 [-.92, .02], *p* = .06, such that, as perceived locus of control increased, BMI at 18 months decreased.

Chaos, Fairness, and Stress

The final model exhibited close fit, $\chi^2(12) = 14.89$, *p* = .25, and accounted for 53% of the variance in primary participant stress, 47% of the variance in untreated spouse stress, 92% of the variance in primary participant BMI at 18 months, and 96% of the variance in untreated spouse BMI at 18 months.

Actor chaos predicted stress, *B* = .70 [.45, .96], *p* < .001. As chaos increased, so did actor stress. Actor report of fairness also predicted stress, *B* = -.19 [-.38, -.01], *p* = .04, such that, as fairness increased, stress decreased. Partner report of fairness did not relate to stress, *B* = .09 [-.08, .27], *p* = .30.

Actor chaos did not predict BMI at 18 month for primary participants, *B* = .19 [-.80, 1.18], *p* = .71, or for untreated spouses, *B* = -.62 [-1.51, .26], *p* = .17. Actor report of fairness, *B* = .21 [-.24, .65], *p* = .37, partner report of fairness, *B* = .11 [-.32, .54], *p* = .62, and actor stress, *B* = .14 [-.36, .64], *p* = .58, did not predict BMI at 18 months

Objective Stressors, Chores, and Eating Self-Efficacy

The final model did not exhibit close fit, $\chi^2(15) = 26.82$, *p* = .03, and accounted for 21% of the variance in primary participant eating self-efficacy, 32% of the variance in untreated spouse eating self-efficacy, 93% of the variance in primary participant BMI at 18 months, and 96% of the variance in untreated spouse BMI at 18 months.

Actor stressors, *B* = -.04 [-.22, .13], *p* = .63, and actor chore inputs, *B* = 1.33 [-.72, 3.37], *p* = .21, did not predict eating self-efficacy. However, partner chore inputs did, *B* = 2.17 [.16,

4.18], *p* = .03, such that, as partner chore inputs increased, so did actor eating self-efficacy. Chore discrepancy score did not predict eating self-efficacy, *B* = -.61 [-2.97, 1.75], *p* = .61.

Actor stressors did not predict BMI at 18 months, *B* = -.07 [-.23, .09], *p* = .36. Neither did actor chore inputs, *B* = 1.74 [-.36, 3.83], *p* = .10, or partner chore inputs, *B* = .40 [-1.70, 2.51], *p* = .71. Chore discrepancy score was marginally related to BMI at 18 months, *B* = -2.69 [-5.39, .02], *p* = .05. As chore discrepancy increased, BMI at 18 months decreased. Actor eating self-efficacy was not related to BMI at 18 months, *B* = -.12 [-.27, .04], *p* = .14

Objective Stressors, Chores, and Exercise Self-Efficacy

The final model exhibited close fit, $\chi^2(15) = 6.01$, *p* = .98, and accounted for 7% of the variance in primary participant exercise self-efficacy, 28% of the variance in untreated spouse exercise self-efficacy, 94% of the variance in primary participant BMI at 18 months, and 96% of the variance in untreated spouse BMI at 18 months.

Actor stressors, *B* = .10 [-.16, .36], *p* = .44, actor chore inputs, *B* = -.01 [-2.86, 2.83], *p* = .99, partner chore inputs, *B* = .86 [-2.05, 3.77], *p* = .56, and chore discrepancy score, *B* = .28 [-3.12, 3.68], *p* = .91, did not predict exercise self-efficacy.

Actor stressors did not predict BMI at 18 months, *B* = -.11 [-.27, .06], *p* = .22. Actor chore inputs, *B* = 1.24 [-.73, 3.21], *p* = .22, and partner chore inputs, *B* = .03 [-1.94, 2.14], *p* = .92, did not predict BMI at 18 months. Chore discrepancy score was related to BMI at 18 months, *B* = -2.77[-5.42, -.12], *p* = .04. As chore discrepancy increased, BMI at 18 months decreased. Actor exercise self-efficacy did not predict BMI at 18 months, *B* = .03 [-.06, .13], *p* = .51.

Objective Stressors, Chores, and Perceived Locus of Control

The final model exhibited close fit, $\chi^2(15) = 13.48$, $p = .57$, and accounted for 30% of the variance in primary participant perceived locus of control, 17% of the variance in untreated spouse perceived locus of control, 94% of the variance in primary participant BMI at 18 months, and 96% of the variance in untreated spouse BMI at 18 months.

Actor stressors related to perceived locus of control, *B* = -.08 [-.15, -.02], $p < .01$. As stressors increased, belief in controllability of weight decreased. Actor chore inputs, *B* = -.17 [-.86, .52], *p* = .63, partner chore inputs, *B* = .20 [-.47, .88], *p* = .56, and chore discrepancy score, *B* = .61 [-.22, 1.45], *p* = .15, did not predict perceived locus of control.

Actor stressors had a marginally significant negative association with BMI at 18 months, *B* = -.14 [-.31, .02], *p* = .10, such that, as stressors increased, BMI decreased. Actor chore inputs, *B* = 1.32 [-.73, 3.37], *p* = .21, and partner chore inputs, *B* = .22 [-1.89, 2.33], *p* = .84, did not predict BMI at 18 months. Chore discrepancy score was marginally related to BMI at 18 months, *B* = -2.58 [-5.33, .1724], *p* = .07. As chore discrepancy increased, BMI at 18 months decreased. Actor locus of control marginally predicted BMI at 18 months, *B* = -.46 [-.95, .03], *p* = .07. As locus of control increased, BMI at 18 months decreased.

The mediated effect of stressors on BMI at 18 months through locus of control was not significant, *a*b* = .04 [-.01, .09], *p* = .13, and the total effect was not significant, *a*b+c* = -.10 [-.26, .06], *p* = .21. The mediated effect of chore discrepancy on BMI at 18 months was not significant, *a*b* = -.09 [-.42, .23], *p* = .57, but the total effect was marginally significant, *a*b+c* = -2.67 [-5.43, .10], *p* = .06.

Objective Stressors, Chores, and Stress

The final model exhibited close fit, $\chi^2(15) = 14.68$, $p = .48$, and accounted for 32% of the variance in primary participant stress, 28% of the variance in untreated spouse stress, 94% of the

variance in primary participant BMI at 18 months, and 96% of the variance in untreated spouse BMI at 18 months.

Actor stressors did not predict stress, *B* = .04 [-.04, .12] *p* = .35. Neither did actor chore inputs, *B* = .44 [-.45, 1.33], *p* = .33, partner chore inputs, *B* = -.22 [-1.13, .70], *p* = .64, or chore discrepancy score, *B* = -.67 [-1.76, .43], *p* = .23.

Actor stressors, *B* = -.09 [-.25, .07], *p* = .28, actor chore inputs, *B* = 1.27 [-.70, 3.23], *p* = .21, and partner chore inputs, *B* = .08 [-1.95, 2.12], *p* = .94, did not predict BMI at 18 months. Chore discrepancy score predicted BMI at 18 months, *B* = -2.69 [-5.32, -.06], *p* = .05. As chore discrepancy increased, BMI at 18 months decreased. Actor stress did not predict BMI at 18 months, *B* = -.02 [-.37, .34], *p* = .92.

Objective Stressors, Fairness, and Eating Self-Efficacy

The final model exhibited close fit, $\chi^2(13) = 11.69$, *p* = .55, and accounted for 20% of the variance in eating self-efficacy, 27% of the variance in untreated spouse eating self-efficacy, 92% of the variance in primary participant BMI at 18 months, and 96% of the variance in untreated spouse BMI at 18 months.

Actor stressors, *B* = -.01 [-.18, .16], *p* = .88, and partner report of fairness, *B* = .29 [-.19, .78], *p* = .23, did not predict eating self-efficacy. Actor report of fairness was related to eating self-efficacy, *B* = .46 [.00, .92], *p* = .05, such that, as actor report of fairness increased, eating self-efficacy also increased.

Actor stressors, *B* = -.07 [-.24, .10], *p* = .43, actor report of fairness, *B* = .23 [-.22, .68], *p* = .31, partner report of fairness, *B* = .16 [-.28, .60], *p* = .48, and actor eating self-efficacy, *B* = -.11 [-.26, .04], *p* = .15, did not predict BMI at 18 months.

Objective Stressors, Fairness, and Exercise Self-Efficacy

The final model exhibited close fit, $\chi^2(13) = 9.99$, $p = .70$, and accounted for 9% of the variance in primary participant exercise self-efficacy, 30% of the variance in untreated spouse exercise self-efficacy, 93% of the variance in primary participant BMI at 18 months, and 96% of the variance in untreated spouse BMI at 18 months.

Actor stressors, $B = .10$ [-.15, .35], $p = .45$, actor report of fairness, $B = .48$ [-.24, 1.19], $p = .19$, and partner report of fairness, $B = -.19$ [-.91, .53], $p = .61$, did not predict exercise self-efficacy.

Actor stressors, $B = -.09$ [-.27, .09], $p = .30$, actor report of fairness, $B = .23$ [-.22, .68], $p = .31$, partner report of fairness, $B = .15$ [-.29, .59], $p = .50$, and actor exercise self-efficacy, $B = .03$ [-.07, .13], $p = .58$, did not predict BMI at 18 months.

Objective Stressors, Fairness, and Perceived Locus of Control

The final model exhibited close fit, $\chi^2(13) = 16.44$, $p = .23$, and accounted for 29% of the variance in primary participant perceived locus of control, 13% of the variance in untreated spouse perceived locus of control, 93% of the variance in primary participant BMI at 18 months, and 96% of the variance in untreated spouse BMI at 18 months.

As actor stressors increased, belief in controllability of weight decreased, $B = -.08$ [-.14, -.02], $p = .01$. Actor report of fairness did not predict locus of control, $B = -.08$ [-.24, .08], $p = .33$. Partner report of fairness marginally did, $B = .15$ [-.02, .31], $p = .08$, such that, as partner fairness increased, belief in the controllability of weight also increased.

Actor stressors, $B = -.15$ [-.33, .02], $p = .09$, and actor perceived locus of control, $B = -.59$ [-1.13, -.05], $p = .03$, related to lower BMI at 18 months. Actor report of fairness, $B = .21$ [-.24, .65], $p = .37$, and partner report of fairness, $B = .19$[-.26, .63], $p = .42$, did not predict BMI at 18 months.

The mediated effect of stressors on BMI at 18 months through locus of control was marginally significant, $a*b$ = .05 [-.01, .10], p = .10. The total effect was not significant, $a*b+c$ = -.11 [-.28, .06], p = .21.

Objective Stressors, Fairness, and Stress

The final model exhibited close fit, $\chi^2(13) = 20.28$, $p = .09$, and accounted for 38% of the variance in primary participant stress, 32% of the variance in untreated spouse stress, 93% of the variance in primary participant BMI at 18 months, and 96% of the variance in untreated spouse BMI at 18 months.

Actor stressors did not predict stress, B = .05 [-.03, .13], p = .22. As actor report of fairness increased, stress decreased, B = -.34, [-.55, -.13], p = .001. Partner report of fairness did not predict stress, B = .08 [-.13, .29], p = .46.

Actor stressors, B = -.09 [-.26, .09], p = .33, actor report of fairness, B = .25 [-.21, .72], p = .29, partner report of fairness, B = .13 [-.31, .58], p = .56, and actor stress, B = .08 [-.32, .49], p = .68, did not predict BMI at 18 months

Meal Structure, Chores, and Eating Self-Efficacy

The final model exhibited close fit, $\chi^2(15) = 24.83$, $p = .05$, and accounted for 34% of the variance in primary participant eating self-efficacy, 37% of the variance in untreated spouse eating self-efficacy, 93% of the variance in primary participant BMI at 18 months, and 97% of the variance in untreated spouse BMI at 18 months.

Actor report of meal structure predicted eating self-efficacy, B = .44 [.21, .67], $p < .001$. When the actor reported more mealtime structure, eating self-efficacy also increased. Actor chore inputs did not predict eating self-efficacy, B = .97 [-.86, 2.81], p = .30, however, partner chore inputs did, B = 1.78 [.03, 3.53], p = .05. As partner chore inputs increased, so did actor

eating self-efficacy. Chore discrepancy score did not predict eating self-efficacy, *B* = -.61 [-2.64, 1.43], $p = .56$.

Actor report of meal structure, *B* = .10 [-.15, .35], $p = .43$, actor chore inputs, *B* = 1.47 [-.61, 3.55], $p = .17$, and partner chore inputs, *B* = .03 [-2.03, 2.09], $p = .98$, did not predict BMI at 18 months. Chore discrepancy score was marginally related to BMI at 18 months, *B* = -2.25 [-4.79, .35], $p = .08$, such that, as chore discrepancy increased, BMI at 18 months decreased. Actor eating self-efficacy marginally predicted BMI at 18 months, *B* = -.14 [-.29, .01], $p = .07$. As eating self-efficacy increased, BMI at 18 months decreased.

The mediated effect of meal structure on BMI at 18 months through eating self-efficacy was not significant, $a*b = -.06$ [-.13, .01], $p = .11$. The total effect was not significant, $a*b+c = .04$ [-.21, .29], $p = .76$. The mediated effect of partner chores on BMI at 18 months through eating self-efficacy was not significant, $a*b = -.24$ [-.60, .11], $p = .18$. The total effect was not significant, $a*b+c = -.22$ [-2.25, 1.82], $p = .84$.

Meal Structure, Chores, and Exercise Self-Efficacy

The final model exhibited close fit, $\chi^2(15) = 13.55$, $p = .56$, and accounted for 10% of the variance in primary participant exercise self-efficacy, 32% of the variance in untreated spouse exercise self-efficacy, 93% of the variance in primary participant BMI at 18 months, and 97% of the variance in untreated spouse BMI at 18 months.

Actor report of meal structure was marginally related to exercise self-efficacy, *B* = .38 [-.00, .75], $p = .05$, such that, as meal structure increased, so did exercise self-efficacy. Actor chore inputs, *B* = -.10 [-2.90, 2.70], $p = .94$, partner chore inputs, *B* = .95 [-1.88, 3.78], $p = .51$, and chore discrepancy score, *B* = -.02 [-3.34, 3.29], $p = .99$, did not predict exercise self-efficacy.

Actor report of meal structure, $B = .07$ [-.20, .33], $p = .62$, actor chore inputs, $B = .90$ [-1.05, 2.84], $p = .37$, and partner chore inputs, $B = -.38$ [-2.36, 1.60], $p = .71$, did not predict BMI at 18 months. Chore discrepancy score was marginally related to BMI at 18 months, $B = -2.18$ [-4.66, .29], $p = .08$. As chore discrepancy increased, BMI at 18 months decreased. Actor exercise self-efficacy did not predict BMI at 18 months, $B = .01$ [-.09, .11], $p = .82$.

Meal Structure, Chores, and Perceived Locus of Control

The final model exhibited close fit, $\chi^2(15) = 10.11$, $p = .81$, and accounted for 29% of the variance in primary participant locus of control, 18% of the variance in untreated spouse locus of control, 94% of the variance in primary participant BMI at 18 months, and 96% of the variance in untreated spouse BMI at 18 months.

As actor report of meal structure increased, so did perceived locus of control, $B = .13$ [.04, .21], $p < .01$. Actor chore inputs, $B = -.33$ [-.99, .33], $p = .33$, and partner chore inputs, $B = -.10$ [-.74, .54], $p = .77$, were not related to perceived locus of control. Chore discrepancy score had a marginally significant relationship with perceived locus of control, $B = .75$ [-.03, 1.53], $p = .06$. As chore discrepancy increased, perceived locus of control also increased.

Actor report of meal structure, $B = .08$ [-.18, .34], $p = .55$, actor chore inputs, $B = .84$ [-1.16, 2.84], $p = .41$, partner chore inputs, $B = -.43$ [-2.45, 1.59], $p = .68$, and chore discrepancy score, $B = -1.92$ [-4.48, 1.59], $p = .14$, did not predict BMI at 18 months. Actor perceived locus of control also did not predict BMI at 18 months, $B = -.32$ [-.80, .16], $p = .19$.

Meal Structure, Chores, and Stress

The final model exhibited close fit, $\chi^2(14) = 19.36$, $p = .15$, and accounted for 49% of the variance in primary participant stress, 28% of the variance in untreated spouse stress, 93% of the

variance in primary participant BMI at 18 months, and 97% of the variance in untreated spouse BMI at 18 months.

Actor report of meal structure predicted stress for primary participants, *B* = -.29 [-.43, -.14], $p < .001$, but not for untreated spouses, *B* = -.09 [-.25, .07], $p = .26$. Primary participant report of more structure around mealtimes related to decreased stress. Actor chore inputs, *B* = .58 [-.25, 1.42], $p = .17$, partner chore inputs, *B* = -.07 [-.89, .76], $p = .87$, and chore discrepancy score, *B* = -.62 [-1.63, .39], $p = .23$, did not predict stress.

Actor report of meal structure, *B* = .07 [-.20, .35], $p = .60$, actor chore inputs, *B* = .91 [-1.05, 2.86], $p = .36$, and partner chore inputs, *B* = -.38 [-2.37, 1.62], $p = .71$, did not predict BMI at 18 months. Chore discrepancy score was marginally related to BMI at 18 months, *B* = -2.18 [-4.65, .30], $p = .09$, such that, as chore discrepancy increased, BMI decreased. Actor stress did not predict BMI at 18 months, *B* = .00 [-.40, .40], $p = .999$.

Meal Structure, Fairness, and Eating Self-Efficacy

The final model exhibited close fit, $\chi^2(13) = 14.97$, $p = .31$, and accounted for 33% of the variance in primary participant eating self-efficacy, 33% of the variance in untreated spouse eating self-efficacy, 92% of the variance in primary participant BMI at 18 months, and 96% of the variance in untreated spouse BMI at 18 months.

Actor report of meal structure predicted eating self-efficacy, *B* = .43 [.19, .67], $p < .001$, such that more meal structure predicted increased eating self-efficacy. Actor report of fairness, *B* = .31 [-.12, .74], $p = .16$, and partner report of fairness, *B* = .15 [-.31, .60], $p = .52$, did not.

Actor report of meal structure, *B* = .06 [-.21, .33], $p = .67$, actor report of fairness, *B* = .19 [-.26, .63], $p = .41$, partner report of fairness, *B* = .14 [-.29, .56], $p = .53$, and actor eating self-efficacy, *B* = -.12 [-.27, .03], $p = .11$, did not predict BMI at 18 months.

Meal Structure, Fairness, and Exercise Self-Efficacy

The final model exhibited close fit, $\chi^2(13) = 15.73$, *p* = .26, and accounted for 11% of the variance in primary participant exercise self-efficacy, 35% of the variance in untreated spouse exercise self-efficacy, 92% of the variance in primary participant BMI at 18 months, and 96% of the variance in untreated spouse BMI at 18 months.

Actor report of meal structure predicted exercise self-efficacy, *B* = .38 [.00, .76] *p* = .05, such that, as meal structure increased, exercise self-efficacy also increased. Actor report of fairness, *B* = .38 [-.36, 1.07], *p* = .32, and partner report of fairness, *B* = -.32 [-1.02, .38], *p* = .37, did not predict exercise self-efficacy.

Actor report of meal structure, *B* = -.00 [-.28, .28], *p* = .98, actor report of fairness, *B* = .20 [-.25, .65], *p* = .39, partner report of fairness, *B* = .11 [-.32, .54], *p* = .62, and actor exercise self-efficacy, *B* = .02 [-.09, .12], *p* = .79, did not predict BMI at 18 months.

Meal Structure, Fairness, and Perceived Locus of Control

The final model exhibited close fit, $\chi^2(13) = 12.72$, *p* = .47, and accounted for 31% of the variance in primary participant locus of control, 16% of the variance in untreated spouse locus of control, 93% of the variance in primary participant BMI at 18 months, and 96% of the variance in untreated spouse BMI at 18 months.

Actor report of meal structure predicted perceived locus of control, *B* = .14 [.06, .23], *p* = .001, such that more meal structure related to increased belief in controllability of weight. Actor report of fairness marginally predicted perceived locus of control, *B* = -.14 [-.30, .02], *p* = .09, such that, as fairness increased, perceptions of controllability of weight decreased. Partner report of fairness did not predict perceived locus of control, *B* = .10 [-.06, .27], *p* = .21.

Actor report of meal structure, $B = .03$ [-.24, .30], $p = .83$, actor report of fairness, $B = .16$ [-.29, .61], $p = .48$, partner report of fairness, $B = .12$ [-.32, .55], $p = .60$, and actor perceived locus of control, $B = -.42$ [-.93, .09], $p = .11$, did not predict BMI at 18 months.

Meal Structure, Fairness, and Stress

The final model exhibited close fit, $\chi^2(12) = 18.74$, $p = .10$, and accounted for 53% of the variance in primary participant stress, 32% of the variance in untreated spouse stress, 92% of the variance in primary participant BMI at 18 months, and 96% of the variance in untreated spouse BMI at 18 months.

Actor report of meal structure predicted stress for primary participants, $B = -.29$ [-.44, -.15], $p < .001$, but not for untreated spouses, $B = -.06$ [-.21, .10], $p = .48$. Primary participant report of more structure around mealtimes related to decreased stress. Actor report of fairness also predicted stress, $B = -.28$ [-.48, -.09] $p < .01$. Greater perceptions of fairness related to decreased stress. Partner report of fairness did not predict stress, $B = .13$ [-.07, .33] $p = .19$.

Actor report of meal structure, $B = .02$ [-.25, .30], $p = .89$, actor report of fairness, $B = .20$ [-.25, .66], $p = .38$, partner report of fairness, $B = .10$ [-.34, .54], $p = .65$, and actor stress, $B = .06$ [-.38, .50], $p = .80$, did not predict BMI at 18 months.