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Goals Matter: Exercising for Well-Being But Not Health or Appearance Predicts Future Exercise Among Parents

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Background: Many parents are insufficiently active. Further research is needed to understand the goals that drive sustained exercise participation among parents. The purpose of this study was to use self-determination theory derived constructs to examine the relationship between parents' exercise goals and their autonomous motivation, controlled motivation, and exercise behavior across 1 year. **Methods**: Mothers (n = 226) and fathers (n = 70) of children less than 16 years completed the Exercise Motivations Inventory-2 and, 1 year later, the Behavioral Regulation in Exercise Questionnaire-2 and Godin Leisure-Time Exercise Questionnaire. Linear mixed effects models were used to examine the longitudinal relationships between exercise goals and autonomous motivation, controlled motivation, and leisure-time exercise. **Results**: All goals except weight management were significantly associated with autonomous motivation, whereas only weight and appearance goals predicted controlled motivation. Exercising for stress management and revitalization, but not health- or appearance-related goals, was significantly related to exercise behavior over 1 year. **Conclusions**: Only goals related to immediate affective outcomes were associated with both autonomous motivation and exercise behavior over time. These findings support recent calls to "rebrand exercise" as a means to improve daily well-being. Such goals may drive parents to prioritize exercise because they value the immediate benefits it provides.

Keywords: physical activity, health promotion, motivation

Engaging in physical activity is associated with a host of physical and mental health benefits,[1] yet a majority of adults in the United States do not engage in recommended levels of activity.[2,3] To address this inactivity epidemic, it is useful to identify subgroups within our population that exhibit disproportionately high levels of inactivity. One such group is parents. Evidence consistently shows parents are less active than nonparents,[4] and longitudinal studies have documented declines in physical activity across the transition to parenthood.[5,6] Parents report a number of major barriers to exercise, including lack of time due to family, work, and household obligations, and guilt associated with taking time away from family to do something for oneself.[7–9] This combination of structural constraints exacerbated by self-imposed expectations about how one "should" be spending his or her time may help explain the high levels of inactivity in this population.

The majority of adults in the United States will become parents,[10] and parents are a strategic group to target because some evidence suggests that active parents are more likely to have active children.[11,12] Thus, parents play a critical role in shaping physical activity/exercise participation among future generations. Active parents could promote physical activity among children through role modeling[13] or through facilitating physical activity opportunities and positive attitudes toward physical activity.[14] Although large numbers of parents are not sufficiently active, inactivity does not have to be inevitable. There are parents who engage in regular exercise, and it is important to understand which goals drive parents to prioritize exercise. In particular, leisure-time exercise is of interest because it requires individuals to explicitly plan for and prioritize the behavior, potentially at the expense of other daily activities. Thus, by understanding which exercise goals motivate regular participation, we can highlight these specific goals in future efforts to promote physical activity among parents.

Behavioral goals are the specific objectives or aims that people strive to achieve from a behavior. They are considered as the starting point of a behavior and the frame through which any behavior is perceived and experienced.[15] Thus, the goals that individuals have for exercising are thought to be extremely influential in determining exercise behavior.[16] For example, previous research has shown goals related to immediate affective benefits (ie, feeling better) are more strongly related to ongoing exercise behavior than goals related to distal benefits such as improved health or weight loss,[17–19] but these relationships warrant further investigation. Self-determination theory (SDT), a leading motivation theory that has been used across distinct populations and behaviors, is considered as an optimal framework for the study of exercise goals and behavior.[20,21]

Self-determination theory posits that human beings have a natural propensity for growth and innate psychological needs for autonomy, competence, and relatedness. Accordingly, when these needs are fulfilled, individuals experience heightened well-being and higher quality motivation to pursue the behaviors that support their needs. SDT is inherently interested in the "what" and "why" of people's behavior. The "what" refers to people's goals or motives for exercising (eg, goal contents, participation motives). In general, the "why" refers to people's behavioral regulations, the extent to which individuals feel autonomous or volitional toward exercising compared with feeling controlled, or exercising out of a sense of pressure or obligation.[22]

Compared with controlled motivation, autonomous exercise motivation tends to be more strongly associated with behavioral pursuit and maintenance.[23] Thus, a core aim of SDT-based

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interventions is to facilitate autonomous motivation, wherein individuals feel volitional in their choice to engage in the behavior because it is inherently satisfying (eg, enjoyment, connection, stress reduction) and/or because it leads to valued outcomes (eg, better health). According to SDT's "goal contents" minitheory and mounting related research, people's exercise goals are thought to precede and impact which behavioral regulations(s) develop and subsequently influence exercise behavior.[24–26] Within SDT, goals can be differentiated by whether they are *intrinsic* or *extrinsic*. Intrinsic goals are conceptualized as being inwardly focused (eg, exercising to feel better) and are known to be more associated with basic need satisfaction and well-being compared with extrinsic goals.[22] Intrinsic goals reflect participating in exercise for the inherent satisfaction from the exercise experience and often constitute affective benefits such as enjoyment, stress reduction, and revitalization that are immediately experienced. In contrast, extrinsic goals are outwardly focused and aim to achieve an external outcome such as the approval of others, an attractive appearance, or even following an exercise regimen to please one's health care provider. Whereas extrinsic goals are inherently future oriented, individuals also may pursue outcomes that take place during or shortly after exercise but are instrumental to long-term goals (ie, social approval from others at a gym; burning calories during exercise).

In general, intrinsic goals tend to be associated with autonomous motivation, whereas extrinsic goals are associated with controlled forms of motivation.[25,27] However, SDT identifies 4 types of extrinsic motivation that are increasingly autonomous in nature. External regulation (exercising to comply with an external demand) and introjected regulation (exercising to avoid guilt or shame) are considered as controlled regulations, whereas identified regulation (exercising because it is consciously valued or personally important) and integrated regulation (exercising because it aligns with one's identity) are considered as more autonomous regulations.[20] Thus, SDT affords many nuances: it is possible to have an extrinsic goal and to have autonomous motivation. For example, a parent could exercise to lose weight because her doctor prescribed exercise during her last visit (eg, an extrinsic goal), but she might also deeply value exercising because she knows she'll feel better from doing it (eg, autonomous motivation). Health-related goals seem to be especially subject to such nuances, as they have demonstrated both positive and negative relationships with autonomous motivation, controlled motivation, and exercise behavior.[25–28] Because health benefits tend to be experienced far in the future, it is possible that health goals may not be perceived as sufficiently relevant to prioritize exercise immediately, even if the individual deeply values health.[18] There remains much to learn about these complex relationships among parents.

One recent study using SDT investigated the relationship between motivation and exercise behavior in a large sample of parents. Findings showed that identified regulation (ie, an autonomous form of extrinsic motivation) was associated with a significant increase in parents' participation in moderate to vigorous physical activity.[29] However, this study did not examine *which* goals might facilitate the development of autonomous motivation. Within SDT, goals are considered to be more proximal and modifiable than behavioral regulations and thus are a more concrete target for interventions aiming to influence individuals' motivation and behavior.[22]

Thus, the purpose of this study was to examine parents' exercise goals and their associations with subsequent autonomous motivation, controlled motivation, and exercise participation across 1 year. Specifically, we examined the extent to which a variety of common exercise goals are related to behavioral regulations and exercise behavior 1 year later, thus enhancing our understanding of how behavioral regulations and exercise participation are impacted by the goals that precede them. To our knowledge, the longitudinal relationships among exercise goals, behavioral regulations, and exercise participation have never been studied among parents. Based on previous yearlong studies of exercise goals conducted by Segar et al,[18,26] our primary hypothesis was that intrinsic goals reflecting immediately experienced affective benefits such as revitalization and stress reduction would predict autonomous motivation and greater exercise behavior over the course of 1 year compared with extrinsic goals related to appearance and weight. Furthermore, we hypothesized that health-related goals would predict both autonomous motivation and controlled motivation, whereas weight- and appearance-related goals would only predict controlled motivation, but neither health- nor appearance-related goals would predict future exercise behavior.

Methods

The procedures were approved by the Kansas State University institutional review board. The study was advertised on social media sites and by a university faculty/staff e-mail announcement. Participants were informed that it was a study of physical activity among parents. Any mother or father of children age 16 and younger (ie, the ages at which children are dependent on their parents for care and transportation) was eligible to be included in the study. Advertisements provided a link to the online surveys, which took approximately 15 to 20 minutes to complete. All participants provided informed consent online before proceeding with the survey questions. After completing all of the survey, participants were instructed to provide an e-mail address for contact purposes if they would be willing to participate in a follow-up 1 year later.

At 1-year post baseline, participants received a total of 3 e-mail reminders, spaced 1 week apart, to participate in the study follow-up. Individuals who did not complete the surveys after the third reminder were considered as nonresponders. At both time points, individuals who completed all measures could enter an e-mail address to be eligible for a $50 gift card. Twenty gift card winners were selected approximately 1 month after both baseline and follow-up. Baseline data were collected during the summer of 2013, and follow-up data were collected during the summer of 2014.

Measures

Demographics. Participants provided demographic information, including gender, age, race, marital status, education, and income. In addition, they indicated the number and age(s) of their child(ren) by responding to the questions "How many children do you have?" and "How old is each of your children?"

Exercise Motives/Goals. Consistent with other research,[23,30] we conceptualized exercise *goals* and *motives* or *reasons* as synonymous. An abbreviated version of the Exercise Motivations Inventory 2 (EMI-2)[31] was used to assess individuals' exercise goals at baseline. Because our primary research question related to differences between exercise goals related to immediate benefits such as daily well-being (eg, revitalization) compared with more distal benefits such as health or weight loss, we included the following 6

subscales from the EMI-2: stress management, revitalization, ill health avoidance, positive health, weight management, and appearance. The enjoyment subscale was initially included but was ultimately omitted because it overlapped significantly with the revitalization subscale. For each item, participants indicated whether a statement beginning "Personally, I exercise (or might exercise) . . ." was true for them on a scale from 0 (not at all true) to 5 (very true). They were instructed to respond to each question whether they were currently exercising regularly or not. Each subscale had 3 items that were summed to yield a total score. The complete list of included items, including the internal consistency of each subscale, is presented in Table 1. Previous studies of the factorial invariance of the EMI-2 have demonstrated the included items to be strong indicators of specific exercise goals, with good internal consistency and discriminant validity.[31] Similarly, in this study, internal consistencies for all subscales were good and ranged from .81 to .90 (Table 1).

Behavioral Regulation. The Behavioral Regulation in Exercise Questionnaire-2,[32] administered at baseline and follow-up, is a multidimensional measure of the extent to which exercise motivation is autonomous or controlled composed of 5 subscales: amotivation, external regulation, introjected regulation, identified regulation, and intrinsic regulation. Participants rated each item on a scale from 0 (not true for me) to 4 (very true for me), and responses were averaged to yield subscale scores (range: 0–4; external .81; introjected .81; identified .84; intrinsic = .93). For this study, the external and introjected regulation subscales were summed to yield a "controlled motivation" score (.71), and the identified and intrinsic regulation subscales were summed to yield an "autonomous motivation" score (.92). Although this methodological approach results in some loss of information by aggregating behavioral regulations, it has been shown to be a justifiable approach to scoring Behavioral Regulation in Exercise Questionnaire data[33] and was selected for this study to streamline the analyses and facilitate simple, straightforward results, and conclusions.

Table 1 Items That Comprised the Exercise Motivation Inventory-2 Subscales

Subscale	Items
Stress management	To give me space to think
.85	To release tension
	To help manage stress
Revitalization	Because it makes me feel good
.90	Because I find exercise invigorating
	To recharge my batteries
Ill health avoidance	To prevent health problems
.86	To avoid ill health
	To avoid heart disease
Positive health	Because I want to maintain good health
.89	To have a healthy body
	To feel more healthy
Weight management	To help control my weight
.81	To lose weight
	Because exercise helps me to burn calories
Appearance	To look more attractive
.87	To have a good body
	To improve my appearance

Exercise Behavior. Exercise was assessed at baseline and follow-up using the Godin Leisure-Time Exercise Questionnaire (GLTEQ).[34] Because we were specifically interested in leisure-time exercise, this measure was selected because it asks participants to report activities only within this specific domain, as opposed to objective measures that capture overall activity, but not the context of the activity (eg, leisure, work, household, or transportation physical activity). The GLTEQ is a brief, widely used measure that asks participants to report the current frequency of engaging in strenuous (eg, running), moderate-intensity (eg, easy bicycling or swimming), and light-intensity (eg, bowling or golf) exercise for at least 15 minutes per session during a typical week. A total weekly leisure activity score is then calculated by multiplying the frequencies of strenuous, moderate, and light activities by corresponding metabolic equivalent intensity values of 9, 5, and 3, respectively, and then summing the products. Thus, the GLTEQ total score estimates total leisure-time exercise energy expenditure in metabolic equivalents during a typical week.

Data Analysis

We employed linear mixed effect models which can consider the subject-specific effect resulting from repeated measurements to evaluate the effects of EMI-2 scales (hereafter referred to as the specific "goals" they reflect) at baseline on the outcomes of interest: autonomous motivation, controlled motivation, and leisure-time exercise. Specifically, the baseline values of the outcomes (motivation or exercise) were retained as part of the outcome variable (ie, the dependent variable) in the model and the baseline goals and the time point of collecting outcomes (named "waves") were considered as covariates in the model. The model was also adjusted for age and gender (1 = male and 0 = female). Because all of the EMI-2 subscales were found to be highly correlated, an orthogonal linear transformation was used to avoid the issue of multicollinearity in the mixed effects model. Specifically, the uncorrelated linear combinations of subscales can be obtained through the principal factor analysis with varimax rotation and each linear combination can represent approximately one specific goal scale determined by the highest standardized coefficient of the scale in the transformation. All goal scales after transformation were put into the model along with other potentially important covariates such as age, gender, and number of children. Potential interactions among waves and goal scales were also examined in the models, but for a parsimonious model, we only reported those that were statistically significant or related to the comparison of males and females. The interaction of "waves" and "gender" (waves gender) was used to examine whether the patterns of change were the same over time in both males and females.

To adjust for any misspecification of the association structure implied in the working mixed effects model, we used a sandwich estimator to obtain the standard errors of all estimated coefficients.[35] In addition, the subject-specific association was estimated by the intraclass correlation coefficient, which can be used to describe the strength of association (or the subject-specific effect) among repeated measurements of the outcome variables. This longitudinal model assumes missing data are missing at random, and thus provides valid statistical inferences while incorporating all available observations.[35] The partial R^2 was also used to express the strength of the associations between the outcomes (motivation and behavior) and the fixed effects such as age, number of children, and

baseline goals in the linear mixed effects model.[36] The interpretation of the partial R^2 is similar to the R^2 in the classic linear regression models for independent data. All statistical analyses were performed using statistical analysis system software (version 9.4; SAS Institute, Cary, NC).

Results

Participants

At baseline, a total of 415 individuals accessed the survey; of these, 296 parents completed the baseline questionnaires and 273 provided an e-mail address to be contacted for the follow-up. At follow-up, 203 participants (69%) provided complete data (154 mothers [68.1%]; 49 fathers [70.0%]). Participants who completed the follow-up were significantly older ($P = .04$) and more educated ($P = .01$) than noncompleters. The 2 groups did not differ on any other demographic, exercise, or SDT-based variables. The average age of the sample at baseline (N = 296) was 36.2 (7.0) years. Parents in this sample were primarily female (n = 226; 76.4%), married (n = 268; 90.5%), White (n = 277; 93.6%), college educated (n = 262; 88.5%), and employed full time (n = 218; 73.6%) with an annual household income more than $45,000 per year (n = 241; 81.4%). Most parents (n = 227; 76.7%) had 2 or fewer children and had a child less than 5 years old (n = 187; 63.2%). Complete demographic characteristics are included in Table 2.

Relationship Between Exercise Goals, Behavioral Regulations, and Exercise Behavior

Descriptive statistics for all variables included in the main analysis, and correlations among all variables in the analysis, are presented in Supplemental Materials (see Supplemental Tables 1 and 2 [available online]), respectively. Participants' autonomous motivation was significantly higher than their controlled motivation at both time points (P 001). The exercise goal that was most endorsed by participants was positive health, whereas revitalization was the goal that was least endorsed.

Table 3 displays the results of the primary analysis. First, we examined the relationships between the 6 exercise goals at baseline and autonomous and controlled motivations over the course of 1 year. Aligned with our hypothesis, revitalization (0.94, P 001) and stress management (0.74, P 001) goals exhibited positive, statistically significant relationships with autonomous motivation. In addition, positive health (0.38, P 001), ill health avoidance (0.20, $P = .04$), and appearance (0.37, P 001) goals exhibited positive, statistically significant relationships with autonomous motivation. Only the weight management subscale was not significantly associated with autonomous motivation (0.10, $P = .20$). Supporting our hypotheses, weight management (0.43, P 001) and appearance (0.32, P 001) goals were significant predictors of controlled motivation, whereas revitalization (0.14, $P = .62$) and stress management (0.06, $P = .44$) goals were not associated with controlled motivation. Contrary to our hypotheses, neither positive health (0.02, $P = .75$) nor ill health avoidance (0.11, $P = .11$) goals were associated with controlled motivation.

We further examined the extent to which the 6 exercise goals predicted exercise behavior across 1 year. Aligned with our hypothesis, results showed that only stress management (4.52, P 001) and revitalization (4.25, P 001) goals were significantly associated with prospective exercise behavior. Exercising to improve health (1.47, $P = .19$), avoid ill health (0.89, $P = .55$), manage weight (2.07, $P = .12$), or improve appearance (1.37, $P = .32$) was not related to longitudinal exercise behavior.

In addition, the ICCs of the 3 models ranged from .612 to .721 (see Table 3), which indicated a strong overall association among the repeated measurements of the outcomes in each individual, supporting the use of mixed effects models which could adequately account for these associations and provide valid statistical inferences. The partial R^2 values provided additional information to interpret the coefficients, in terms of each goal's strength of contribution to the outcome in the presence of other variables. The conclusions given by these partial R^2 values were consistent with the significance of values. Specifically, stress management and revitalization goals showed the strongest associations with exercise behavior and autonomous motivation, whereas weight management and appearance goals showed the strongest associations with controlled motivation.

Table 2 Demographics of the Sample at Baseline (N = 296)

Variable	Categories	Mean (SD)/ Frequency (%)
Gender	Female	226 (76.4)
	Male	70 (23.6)
Age, y		36.2 (7.0)
Marital status	Married/Partnered	268 (90.5)
	Single/Divorced/Separated	27 (9.1)
No. of children		1.9 (1.0)
Age of youngest child, y		4.5 (4.4)
Employment	Employed full time	218 (73.6)
	Employed part time	32 (10.8)
	Homemaker	30 (10.1)
	Other	16 (5.4)
Education	Less than college degree	34 (11.4)
	College degree	97 (32.8)
	Postgraduate degree	165 (55.7)
Annual household income	$45,000	241 (81.4)
Race	White	277 (93.6)

Discussion

This study was designed to examine the prospective relationship between exercise goals, behavioral regulations, and exercise behavior among parents. Results showed that only exercising to achieve stress management and revitalization predicted exercise behavior across 1 year in this parent sample. Furthermore, as hypothesized, exercising to achieve these 2 types of goals was associated with autonomous motivation, whereas exercising to achieve weight management and improved appearance predicted controlled motivation. Interestingly, while exercising to enhance health or avoid ill health was associated with autonomous motivation, neither health-related goal predicted future exercise behavior. These findings align with previous research showing that exercise goals aiming for immediate positive experiences (eg, well-being,

Table 3 Effects of Exercise Goals on Autonomous Motivation, Controlled Motivation, and Exercise Behavior Across 1 Year

	Exercise behavior				Autonomous motivation				Controlled motivation			
	Estimate	SE[b]	*P* value[c]	Partial R^2	Estimate	SE[b]	*P* value[c]	Partial R^2	Estimate	SE[b]	*P* value[c]	Partial R^2
Intercept	37.022	6.977	.001	–	5.697	0.399	.001	–	3.142	0.403	.001	–
Age, y	−0.095	0.195	.628	.001	−0.004	0.012	.739	.001	−0.015	0.012	.209	.008
Waves	−0.105	1.613	.948	.001	−0.034	0.086	.694	.002	−0.080	0.088	.361	.002
Gender	0.185	3.579	.959	.001	0.196	0.209	.349	.005	0.355	0.192	.066	.029
Waves × gender	−0.856	2.864	.765	–[d]	−0.030	0.139	.828	–[d]	0.137	0.165	.408	–[d]
Number of children	2.207	1.334	.099	.013	0.024	0.084	.778	.001	−0.008	0.077	.914	.001
EMI-2 stress management[a]	**4.515**	**1.107**	**<.001**	.075	**0.739**	**0.070**	**<.001**	.359	0.059	0.075	.433	.003
EMI-2 revitalization[a]	**4.253**	**1.014**	**<.001**	.079	**0.936**	**0.078**	**<.001**	.414	−0.145	0.077	.061	.017
EMI-2 positive health[a]	1.470	1.108	.186	.009	**0.382**	**0.088**	**<.001**	.085	0.025	0.074	.736	.001
EMI-2 ill health avoidance[a]	0.885	1.473	.549	.002	**0.203**	**0.097**	**.037**	.021	0.113	0.071	.110	.013
EMI-2 weight management[a]	2.070	1.313	.117	.012	0.100	0.078	.200	.008	**0.425**	**0.066**	**<.001**	.167
EMI-2 appearance[a]	1.373	1.371	.318	.005	**0.367**	**0.075**	**<.001**	.102	**0.323**	**0.071**	**<.001**	.091
ICC	.612				.721				.680			

Abbreviations: EMI-2, Exercise Motivations Inventory-2; ICC = intraclass correlation coefficient.
[a]EMI-2 subscales are transformed using orthogonal linear transformation. [b]Standard errors are estimated by a sandwich estimator. [c]Two-sided *P* values are calculated by using a *t* distribution. Boldface indicates statistical significance. [d]The partial R^2 were calculated based on the model without the interaction of "waves" and "gender" because of its nonsignificance.

feeling good) are the best predictors of future behavior in a variety of populations.[17–19] However, this is the first study to examine these relationships prospectively in a sample of parents, who might have unique beliefs and needs regarding exercise and health given their responsibility for caring for their children.[37,38] The implications of these findings for research and practice are discussed below.

Exercise goals related to revitalization and stress reduction might be optimal for driving exercise because they are both autonomous, and they also deliver benefits that help individuals *immediately* feel and perform better in their daily lives.[39] Busy parents have limited leisure time[9] and thus might feel restricted to only prioritizing activities that have the potential to benefit their daily lives in concrete, noticeable ways. When parents view exercise as a means to relieve stress or revitalize themselves, they may exercise with a sense of volition and choice because they know they will immediately achieve these valued benefits. Furthermore, parents may notice that these "feel good" effects of exercise engagement also benefit their entire families.[40] Most existing evidence suggests both active and inactive parents view their families as a top priority and focus on their parenting roles and commitments when deciding whether or not to engage in regular exercise.[7,8] Parents who exercise to manage stress or feel revitalized may be less likely to view exercise as "selfish," but instead, they view it as a means for spending quality time with their children and/or coping with the challenges of being a parent.

In contrast, exercising to lose weight or improve appearance could be perceived as a selfish pursuit, as well as experienced as controlling due to societal pressures to look a certain way.[30] Interestingly, appearance-related goals predicted controlled motivation *and also* autonomous motivation, whereas weight-related goals predicted controlled motivation only. Yet neither weight-nor appearance-related goals were associated with future exercise behavior. There are several possible explanations for these findings. Weight loss expectations are often unrealistic and unattainable,[41] or at best, take longer than expected to achieve.[42] Thus, when individuals lack feedback that they are making progress toward their goals, they become discouraged and discontinue exercise.[43] Alternatively, even if weight loss goals are achieved, exercise motivation and behavior may still wane because the primary goal driving exercise is no longer needed. This would be especially true if the individual has not internalized any inherent value in engaging in exercise beyond weight loss.[44] The results from this study add to mounting evidence showing that weight- and appearance-related goals for exercising are associated with nonoptimal psychological and behavioral outcomes.[45–47] Despite this evidence, appearance remains one of the most common goals the popular media promote to women in general and mothers in particular.[28,48,49]

The relationship between health-related goals and exercise behavior, however, is much less clear-cut in the existing literature.[23] Health has been considered as both an intrinsic goal and an extrinsic goal and has been associated with both autonomous and controlled motivation.[25–28] Some of the discrepancies in the literature may be based on differing approaches for measuring health goals. For example, in some measures, immediate affective outcomes such as increased energy have been operationalized as health-related items,[25] whereas other measures focus specifically on more distal outcomes such as physical health or disease prevention.[31] In addition, health goals may be viewed differently if they are framed as approaching positive health versus avoiding negative health,[50] or if health is framed as an end in and of itself versus a means to achieving other valued goals (eg, being healthy enough to complete daily tasks with vigor).[51] To date, our field has viewed health as an optimal goal because it is considered as intrinsic and has been positively associated with autonomous motivation.[27] This perspective infiltrates our societal promotion of physical activity and exercise (especially in health care) as well as the goals that individuals report striving to achieve, as evidenced by the high endorsement of health-related goals in this study,

among others.[18] Yet, research is mounting suggesting that health-related goals may not drive regular exercise as well as other types of intrinsic goals that deliver immediate positivity (eg, revitalization).[17,18]

The results of this study suggest exercising both to enhance health and avoid negative health outcomes predicts autonomous motivation but not exercise behavior among parents. Though these results may seem surprising given the well-established association between autonomous motivation and behavior, there are some potential explanations why parents who would ideally like to be healthier through exercise may not successfully pursue these goals. First, health benefits may be too abstract and distant to drive the daily decision making that undergirds consistently exercising.[18] Research suggests that in order for individuals to continue to pursue their goals, they need to receive ongoing feedback that that they are achieving their goals.[52] In addition, research on delay discounting would suggest that people are less likely make choices that bring rewards in the future compared with obtaining them in the now.[53,54] For example, for parents who are in relatively good health, any gains in health might not be visible and provide the requisite feedback for continual goal striving, so a "disease prevention/health promoting" goal might not be relevant enough to their daily needs to motivate ongoing behavior due to the "pay off" from these goals being far into the future.[55] Even when pursuing better health is for autonomous reasons (eg, I deeply value being healthy) versus for controlled reasons (eg, My doctor told me to exercise because I need to lose weight), this pursuit for a future outcome still might not make exercise sufficiently compelling when competing against parents' other daily priorities.[56] Furthermore, some research suggests that health goals may be experienced as controlling, especially when perceived gains in health from exercising are low.[27,28] Thus, more research on the value of promoting exercise for health is clearly needed to better understand the nuanced relationships between health goals, decision making, behavioral regulations, and exercise behavior.

These findings have potential implications for the development of exercise promotion messages and interventions targeting parents. It is important to point out that the 2 goals that predicted exercise behavior (ie, stress management and revitalization) were the least endorsed goals for exercising, suggesting parents may not be thinking about exercise in terms of these benefits or regularly experiencing these benefits. This is not surprising, considering the current discourse surrounding exercise in the popular media focuses largely on benefits related to weight loss and/or appearance[47,48] and health.[57] Unfortunately, messages targeting weight loss have been linked to increased body shame and negative attitudes toward exercise.[47,57] In clinical settings, exercise is typically prescribed as a tool for losing weight or improving health, but rarely as a means for improving daily well-being.[58] However, this study's findings suggest that promoting exercise for health or weight-related reasons is not likely to drive long-term maintenance of exercise behavior among parents. Rather, to alleviate feelings of guilt parents often experience from taking time for their own self-care[7] as well as foster autonomous motivation, these findings suggest communications should consider reframing physical activity for parents. This new frame would (a) emphasize that parents can use physical activity as a strategy to boost immediately experienced benefits, such as stress reduction and revitalization and (b) socialize parents that experiencing these positive outcomes is actually a resource that benefits their entire families (eg, by allowing the mother or father to be a less stressed, happier parent).[59] This reframing of exercise should help inactive parents learn to view exercise as a way to make meaningful contributions to the areas of their daily lives they most value.

These findings may also help inform the development of exercise interventions targeting parents. Interventions might facilitate autonomous motivation directly by giving parents permission to autonomously choose the exercise type, duration, and setting they prefer,[60] as opposed to perpetuating the notion that there is a "right" way to exercise through prescribing specific doses (eg, X min per session, X times per wk, at X intensity). Such prescriptions may undermine enjoyment as well as evoke controlled motivation to exercise in a constrained way.[61] If an individual finds or expects exercise to be unpleasant, research in decision making and affective science suggest that he or she will be unlikely to choose to do it, regardless of his or her knowledge of the long-term health benefits.[54,55,62,63] New messaging that permits participants to exercise in ways that they prefer (eg, that deliver pleasure and vitality) as well as do so *in order to revitalize* themselves should boost autonomous motivation as well as positive affective outcomes.[61,64] In addition, interventions can help parents learn to perceive physical activity as a good way to spend quality time and connect with their children.[7,38] This specific strategy might also help parents transcend the false choice they often experience between taking care of themselves and spending time with their families. This idea is supported by research showing that social factors (eg, affiliation and feeling related) motivate autonomy toward and participation in exercise.[27,65]

This study has a number of limitations that must be acknowledged. First, the exercise data are self-reported and limited to leisure-time exercise. Parents may be accumulating physical activity in other domains (eg, work, household) that were not captured by the measure utilized. Furthermore, the brief measure did not provide any descriptive information regarding the types of activities in which participants were engaging, which may have helped contextualize the goals they endorsed. The representativeness of the sample was also limited in several ways. Although both mothers and fathers were recruited for the study, mothers comprised approximately 75% of the final sample, so further research is needed to understand whether the relationship between exercise goals and behavior differs between mothers and fathers, as well as to identify specific strategies for recruiting fathers for health-related research. Such strategies could use the SDT framework to identify the exercise goals that are most highly valued by fathers and highlight those goals to meaningfully engage this understudied population.[66] The current sample included mostly married parents with young children and high levels of income and education, so these results may not generalize to all parents. Exercise goals may differ among single parents, parents of older children, or those with low income and/or education whose priorities and access to resources differ. In addition, we did not collect data on the health status or body mass index of the participants, so we are unable to draw conclusions about the relative importance of health and weight-related goals based on current health or weight status. Finally, we did not account for any changes in number of children, employment status, or marital status between time points, all of which could potentially influence exercise behavior.

Although the study design allowed for the examination of the prospective relationship between goals and behavior, including an additional time point would have been beneficial to test a full meditational model, whereby goals influence behavior by autonomous and controlled motivation. In addition, aggregating behavioral regulations may have masked some of the nuances of the relationships between goals and different types of autonomous or controlled regulations (eg, whether the goals exhibit different

relationships with identified vs intrinsic regulation). Future studies should consider more complex designs to further enhance our understanding of the temporal relationships among SDT constructs and should also consider assessing how exercise goals and behavioral regulations are associated with other components of the SDT framework such as exercise-based psychological need satisfaction.[67] Finally, about 30% of the sample dropped out before the 1-year follow-up. To determine whether results were biased by using available data only, we repeated the analyses using the last value carried forward approach to impute missing data. Results were not significantly different; thus, we are confident that the missing data did not impact the results or interpretations reported herein.

Conclusions

The results of this study shed light on the relationships between exercise goals, behavioral regulations, and exercise behavior among parents. Research shows that goals are central to exercise motivation and participation, yet not all goals are equally potent. Overall, the findings among parents lend support to previous studies showing that intrinsic goals focused on achieving immediate affective outcomes, such as revitalization and stress reduction, might be among the most influential goals to motivate exercise.[17,53] In the present sample of parents, despite being positively associated with autonomous motivation, health goals did not predict future exercise behavior. These findings support recent calls to "rebrand exercise" as a specific strategy to boost immediate positive affective experiences that enhance daily well-being.[18] Aligned with science suggesting that our decisions are strongly influenced by anticipating how the behavior will make us feel,[54,55] interventions that help parents perceive exercise as a means to as boost daily quality of life, as opposed to changing appearance, losing weight, or improving future health, may help parents prioritize exercise because they value its immediate revitalizing impact and how this can further benefit their families and other meaningful areas of their lives.[59]

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