

# Role of parental autonomy support on self-determination in influencing diet and exercise motivation in older adolescents

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**Abstract:** Parental influence to promote autonomy and self-determination in their children as they grow up may also motivate them to exercise and eat healthily. Unfortunately, nutritious dietary consumption and physical activity frequency tend to decline during the adolescent years and reaches its lowest level as the adolescent nears adulthood. In this study of 132 freshman and sophomore college students, the influence of parental autonomy support on overall adolescents self-determination was examined to determine whether self-determination influences adolescents' motivation to engage in healthy diet and exercise behaviors. Utilizing hierarchical multiple regression analyses, parental autonomy support was not predictive of older adolescents' motivation for diet and exercise; however, study results did indicate that parental autonomy support remains highly influential in adolescent self-determination ( $F[2, 130] = 22.21; P = 0.001$ ) during early college years and that in this sample, adolescent self-determination is predictive of motivation for diet ( $t = 2.21; P < 0.05$ ), but not exercise. Findings suggest that parental autonomy support continues to influence adolescent internalization of attitudes and behaviors during later adolescence, but may play a lesser role in motivation for specific health-related behaviors as the adolescent nears adulthood. A better understanding of health motivation antecedents of adolescents may facilitate nurses develop new approaches to health-promotion strategies.

**Keywords:** parental autonomy support, self-determination, adolescent health behaviors, motivation

## Introduction

Poor health behaviors, such as imbalanced nutrition and drastic reductions in physical activity, often begin during adolescence. Establishment of these health-related behaviors during this stage of life is particularly concerning because health behaviors demonstrated as the adolescent nears adulthood are often predictive of lifelong patterns and are associated with an increased risk of premature onset of chronic disease and death.<sup>1-3</sup> Despite the drastic rise in adolescent obesity and the premature onset of many obesity-related chronic conditions, in comparison with other developmental stages, adolescence has traditionally been viewed as a time of few health concerns.<sup>4,5</sup> In fact, adolescents are more concerned about health-related issues than is recognized by most adults. Furthermore, their concerns about health are broader than those considered by adults and are not limited to those related to chronic illness.<sup>4</sup>

Family influence has been recognized as significant in shaping patterns of behavior of its members, including the health behaviors of teens and young adults.<sup>6-8</sup> Research suggests that parents who consider their adolescent's perspective and value the adolescent's opinion exhibit greater influence on their adolescent's internalization of academic,

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social, and health-related outcomes.<sup>9–11</sup> Internalization, the process by which a set of norms or values is adopted as one's own, may become solidified during later adolescence if proactive health behaviors are perceived by the adolescent in a manner that is supportive of the adolescent's need for advancing autonomy.<sup>12</sup>

Adolescent health attitudes and motivation for their health behaviors also shift over time. Whereas younger adolescents are motivated to engage in healthier lifestyle practices in order to establish or maintain peer relationships and acceptance and not because they are concerned with their future health,<sup>13</sup> middle-to-late adolescents are primarily motivated to exercise for perceived romantic appeal, athleticism, and physical appearance.<sup>14</sup> Perceived physical appearance, establishing romantic relationships, and competence continue to play a role in motivations for older adolescent health behavior; however, older adolescents are also capable of understanding disease vulnerability and engaging in or modifying health behaviors to avoid potential negative health consequences.<sup>15</sup> Examination of factors that influence adolescent health behavior motivation is needed because motivation for a behavior is predictive of behavior participation.<sup>16–19</sup>

## Self-determination theory

The foundation of self-determination theory (SDT) is the belief that all humans have the psychological needs of autonomy (directing one's own behavior), competence (feeling effective in one's continuous interaction with social environment and decision-making), and relatedness (feeling connected and cared for by others).<sup>20</sup> Autonomy, which is recognized as the most significant psychological need, is at the core of SDT. The fulfillment of these basic underlying needs provides the foundation for understanding human behavior. Social environments that support and allow growth of the three basic needs are predicted to assist with healthy functioning, whereas social environments that conflict with the basic needs are viewed as being antagonistic and as having the capability of disrupting growth and stability. In addition, environments that allow for an increase in or further development of any of the three psychological needs are believed to enhance the individuals' self-determination and, in turn, to support their ability to make positive choices in an effort to improve their own health and happiness.<sup>21,22</sup>

Essential to SDT is the distinction between two types of motivation: autonomous and controlling. The two types of motivation are viewed as if on a continuum and represent an individual's motivation for a behavior. This continuum is

referred to as the perceived locus of causality.<sup>23</sup> Autonomous motivation is at one end of the continuum and represents an individual's engaging in a behavior because it satisfies personal goals and assists in the fulfillment in at least one of the three basic needs: autonomy, competence, and relatedness. At the opposite end of the motivation continuum is external (ie, controlled) regulation. External regulation indicates an individual's participation in a behavior is a result of external pressures or forces. It is believed, that if given the proper support and the removal of controlling factors, behaviors can become more internalized, move along the continuum, and may eventually become autonomously motivated.<sup>23,24</sup>

## Self-determination

Self-determined behaviors are actions initiated out of personal interests and motivation. The degree to which an adolescent is self-determined is influenced by the fulfillment of their psychological needs, including autonomy. Adolescents who are more autonomously motivated (self-determined) perceive greater control in their life decisions and are generally more persistent in their endeavors,<sup>25–27</sup> have greater performance,<sup>28</sup> are more able to cope with stressors,<sup>29</sup> and perceive more positive life events<sup>30</sup> in comparison to adolescents who do not perceive that their decisions and behaviors are autonomously motivated. In addition, adolescents who are more self-determined toward a behavior are more likely to engage in the behavior more frequently and continue the behavior over time

## Parental autonomy support

Parental autonomy support reflects a method of interaction where the use of control and coercion is minimized, the viewpoint of the adolescent is considered, and exploration of the adolescent's own interests is encouraged.<sup>22,31</sup> Parents who are autonomy supportive provide options and meaningful justification during decision-making and are empathetic to the youth's position.<sup>20,32</sup> Because the adolescent perceives that their actions are based on their personal interests, values, and goals, adolescents who identify their parents as more autonomy supportive exhibit greater autonomous or self-determined behavior, become more engaged in their activities, demonstrate greater self-governance, and are more accountable for their actions.<sup>9,33</sup> Moreover, adolescents who perceive their parents as autonomy supportive regarding physical activity are more likely to internalize, and thus demonstrate greater self-determination, towards physical activity and participate in more physical activity during leisure times than those who perceive their parents as less autonomy supportive.<sup>34–36</sup>

In addition, parental autonomy support is contributory to the adolescent's general self-determination.<sup>21,22</sup> Adolescents who demonstrate more self-determined behavior achieve more adaptive outcomes than less self-determined adolescents.

While parental autonomy support is a critical construct, contributions of adolescent-perceived autonomy support by both mothers and fathers viewed individually may also provide greater understanding of each parent's role in autonomy development; however, few studies have reported separate examination of maternal and paternal support of autonomy. In general, mothers are most often viewed as the most autonomy supportive parent;<sup>10</sup> however, both parents appear to contribute to adolescent self-determination.<sup>9,37–39</sup> Interestingly, when evaluating parental autonomy support of risky health behaviors in older adolescents, fathers' influence may become more significant than in earlier adolescent years. Moreover, research suggests that increased communication and autonomy supportive behavior by fathers may actually increase maternal communication and support of autonomy in adolescent risky (ie, sexual) behavior, which suggests that fathers may play a more prominent role than previously recognized.<sup>40,41</sup>

## Hypotheses

Although these aforementioned relationships have been observed in the adolescent population, the influence of parental autonomy support (ie, paternal and maternal) on motivation for specific health behaviors in older adolescents has not been studied. The present study utilizes SDT to examine the influence of parental autonomy support on older adolescent motivation for diet and exercise behaviors. In addition, the study also examines the influence of parental autonomy support on overall adolescent self-determination as well as the possible mediation of adolescent self-determination between parental autonomy support and adolescent motivation for diet and exercise behaviors. The hypotheses that guided this study are:

1. Parental autonomy support positively affects adolescent self-determination, which then positively affects motivation for dietary behaviors; and
2. Parental autonomy support positively affects adolescent self-determination, which then positively affects motivation for exercise behaviors.

## Methods

### Participants and procedure

Complying with tenets of the Declaration of Helsinki and following Institutional Review Board approval, recruited

participants were aged 18–19 years and attended an urban 4-year college during the fall semester in the Southeast United States. Because it was desirable to enhance the generalizability of the study, students enrolled in remedial or core freshman and sophomore English courses were invited to participate. Such courses included Basic Skills English, English Composition, Oral Communication, and American Literature. The average English class size was 25 students.

Study participation information, including eligibility requirements, was provided to each potential participant in written form. In addition to the requirement that the participant be aged 18–19 years, eligibility criteria specifications were that the adolescent: (a) had never been married; (b) did not have children of their own; (c) had not been diagnosed with a health condition that restricted physical activity or mandated a particular diet; (d) were enrolled in college; (e) had two parental figures; and (f) were able to read, write, and speak English. Those meeting eligibility requirements were then invited to participate. Participation was voluntary and confidential and participants could withdraw from the study without penalty at any time.

Study information and eligibility requirements were posted throughout the English department 1 week prior to data collection. Data collection occurred at the beginning of each class. Potential participants were provided a written information sheet that detailed essential study elements, and all questions that arose were answered by the researcher. All self-identifying eligible adolescents who desired to participate (participation implied consent) were provided a numbered packet that contained (in order) the demographic questionnaire and all other questionnaires. Each participant was issued a US\$5.00 lunch voucher upon return of their packet.

A total of 227 students were approached; 68% of those approached were eligible and participated. A total of 150 participants completed the questionnaires; however, 18 questionnaire packets were incomplete and were excluded from the analyses. This procedure resulted in a final sample of 132 participants.

## Measures

### Demographics: background questionnaire

Demographic variables included the adolescent's sex and age, current residence, family structure, ethnicity, and socioeconomic status (SES) of the family of origin, which was established by applying the Hollingshead index<sup>42</sup> (a scale developed to estimate familial social position in which larger scores on the Hollingshead index are reflective of higher SES).

## Parental autonomy support

Maternal and paternal autonomy support was assessed by the Parental Autonomy Support Subscales from the college student version of the Perception of Parents Scale.<sup>10</sup> The Perception of Parents Scale assesses adolescent perceptions of maternal autonomy support and paternal autonomy support separately. Both maternal and paternal versions of the Parental Autonomy Support Subscale consist of nine items. Participants rated their agreement with statements (eg, “My mother/father seems to know how I feel about things”) on a 7-point scale ranging from 1 (not at all true) to 7 (very true). The college-age version of the maternal autonomy support subscale and paternal autonomy support subscale have yielded Cronbach’s alphas ranging from 0.81–0.83.<sup>10</sup> Confirmatory factor analysis supported the scale’s construct validity<sup>10</sup> as indicated by all items loading significantly on the factor. In this study, Cronbach’s alphas of Maternal Autonomy Support Subscale and Paternal Autonomy Support Subscale were 0.89 and 0.87, respectively.

## Self-determination

The Self-Determination Scale<sup>43</sup> is a 10-item self-report instrument designed to measure the extent to which people function in a self-determined manner. For each item, participants choose which statement was most true for them (ie, (A) “I sometimes feel that it’s not really me choosing the things I do” or (B) “I always feel I choose the things I do”) by using a numerical scale ranging from 1 (only A feels true) to 5 (only B feels true). The scale has demonstrated good internal consistency (Cronbach’s alpha = 0.85–0.93);<sup>43,44</sup> and adequate test–retest reliability ( $r = 0.77$  over an 8-week period).<sup>43</sup> In this study, the Cronbach’s alpha was 0.74.

## Motivation for the health behaviors of diet and exercise

Motivation for diet and motivation for exercise were evaluated utilizing behavior-specific versions of the Autonomous Regulatory Style Scale (ARSS).<sup>23</sup> The ARSS is a 6-item subscale derived from the Treatment Self-Regulation Questionnaire (TSRQ),<sup>23</sup> and was designed to evaluate autonomous motives of why people engage in some health behavior, try to change an unhealthy behavior, adhere to a treatment program, initiate treatment for a medical condition, or engage in some other health-related behavior. Four versions of the scale exist: smoking cessation, diet improvement, exercising regularly, and drinking responsibly. This study incorporated both the ARSS for diet and the ARSS for exercise subscales to evaluate their perspective behaviors. For each item,

participants rate their agreement with each statement (ie, “The reason I would eat a healthy diet/exercise regularly is because I want to take responsibility for my health”) on a 7-point scale ranging from 1 (not at all true) to 7 (very true). Cronbach’s alpha for the ARSS has consistently ranged from 0.72–0.85.<sup>45</sup> In this study, Cronbach’s alpha was 0.88 (diet) and 0.87 (exercise).

## Data analysis

Demographic variables of age, sex, residence, family structure, and ethnicity were summarized by using frequencies and measures of dispersion to describe sample characteristics. Sample characteristics of independent, mediating, and dependent variables were depicted. Respondents’ family SES was reported as interval data. Also reported as interval data were the independent and the dependent variables (motivation for healthy dietary behavior and motivation for exercise behavior). Before further analyses were undertaken, bivariate correlations between all variables were conducted. Maternal autonomy support and paternal autonomy support were assessed for a relationship.

Adolescent sex was coded as a categorical variable (male = 0, female = 1); ethnicity (1 = minority, 2 = nonminority), college rank (1 = freshman, 2 = sophomore), family structure (1 = 2 biological parents, 2 = all other family structures), and residence (1 = lives with parents, 2 = does not live with parents) were coded in a similar fashion. SES was obtained via the Hollingshead index. In two-parent homes, mother and father scores were added together to form a single family SES score. In single-parent homes, the custodial parent’s Hollingshead score was utilized as the family SES score.

It was determined a priori that only demographic variables significantly correlated ( $P < 0.05$ ) with the outcome variable(s) would be controlled for in each model. Self-determination was regressed on parental autonomy support. Hierarchical step-wise regression analysis was then used to assess the relationship of maternal and paternal autonomy support with the dependent variable, autonomous motivation for diet. Adolescent age, adolescent sex, and family structure were entered into the first block because they were significantly correlated to autonomous motivation for diet. Maternal and paternal autonomy support was entered into the second block. Lastly, self-determination was entered into the model. Then, hierarchical regression analysis was utilized to evaluate the relationship of adolescent motivation for exercise with the predictor variables. First, age was entered into the model because it was significantly correlated with adoles-

cent motivation for exercise. Second, maternal and paternal autonomy support were entered into the model. Lastly, self-determination was entered into the model.

## Results

### Descriptive statistics and correlations

Table 1 provides descriptive statistics on the demographic variables. The participants ranged in age from 18 to 20 years ( $M = 18.52$  years). Sixty-five percent of the participants were female ( $n = 86$ ), and 58% ( $n = 77$ ) were Caucasian. All participants reported two parental figures; however, family composition varied. Family structure composed of two biological parents was 68% ( $n = 90$ ). Seventy-six percent of the participants were middle SES freshmen ( $n = 100$ ) who lived outside of the parental residence ( $n = 100$ ).

The correlations (Table 2) and a series of hierarchical regressions (Tables 3–5) were conducted to determine predictors of diet and exercise motivation. Hierarchical regression models were created with diet and exercise separately serving as the dependent variable. Only demographic variables significantly correlated with the outcome variable were controlled. Age was positively associated with motivation for diet ( $r = 0.29$ ,  $P < 0.01$ ) and exercise ( $r = 0.19$ ,  $P < 0.05$ ) and was also positively related to maternal autonomy support

( $r = 0.19$ ,  $P < 0.05$ ) but not paternal, autonomy support ( $r = 0.17$ ,  $P < 0.05$ ). Maternal ( $r = 9.24$ ,  $P < 0.01$ ) and paternal autonomy support ( $r = 0.18$ ,  $P < 0.05$ ) were significantly correlated with motivation for exercise, but neither were significant in the adolescent's motivation for a healthy diet. Self-determination was not associated with any demographic variable, but was positively related to maternal autonomy support ( $r = 0.44$ ,  $P < 0.001$ ) and paternal autonomy support ( $r = 0.38$ ,  $P < 0.001$ ). In addition, self-determination was positively related to motivation for diet ( $r = 0.18$ ,  $P < 0.05$ ) and exercise ( $r = 0.21$ ,  $P < 0.05$ ).

### Prediction of motivation for diet and exercise behaviors

Regression analysis for adolescent self-determination revealed maternal ( $t = 4.37$ ,  $P < 0.001$ ) and paternal autonomy support ( $t = 3.28$ ,  $P < 0.001$ ) were significant predictors of self-determination ( $F[2, 130] = 22.21$ ,  $P = 0.001$ ) and explained 26% of the variance in the model (Table 3).

### Hypothesis 1

The overall hierarchical regression model ( $F[5, 127] = 6.7$ ) was significant. The demographic variables demonstrated a positive relationship, yielded an adjusted  $R^2$  of 0.196, and

**Table 1** Characteristics of the sample ( $N = 132$ )

Variable	Frequency/ percent	Mean/SD	Range	Cronbach's alpha
Age (years)		18.52 (0.70)	18–20	
Gender				
Male	47 (35.61%)			
Female	85 (64.39%)			
Ethnicity				
Caucasian	76 (57.57%)			
African-American	56 (42.43%)			
Family structure				
2 parent biological	90 (68.18%)			
1 biological and 1 step-parent	27 (20.45%)			
1 parent	9 (6.81%)			
Adoptive	3 (2.27%)			
Grandparents	1 (0.76%)			
Other	2 (1.51%)			
Residence				
With parent(s)	32 (24.24%)			
Apartment or dorm	100 (75.76%)			
Socioeconomic status		45.88 (16.53)	11.25–76.00	
Maternal autonomy support		4.76 (1.04)	1.68–6.31	0.89
Paternal autonomy support		4.54 (1.19)	1.01–6.31	0.87
Autonomous motivation (diet)		4.46 (1.12)	1.89–6.03	0.88
Autonomous motivation (exercise)		4.80 (1.01)	1.94–6.03	0.87
Self-determination		3.70 (0.58)	2.12–4.55	0.74

**Abbreviation:** SD, standard deviation.



**Table 2** Intercorrelation of study variables (N = 132)

Variables	1	2	3	4	5	6	7	8	9	10	11	12
1. Age	–	0.01	0.07	0.15	–0.18*	0.64**	0.08	0.19*	0.14	–0.00	0.29**	0.19*
2. Gender		–	0.06	0.12	0.06	–0.01	0.02	0.02	0.12	–0.05	0.20*	0.01
3. Residence			–	0.34**	–0.19*	0.20*	0.17	0.13	–0.01	–0.06	–0.08	–0.09
4. Ethnicity				–	0.08	0.18*	0.11	0.09	0.09	0.03	0.07	0.06
5. Family structure					–	–0.17	–0.15	0.01	–0.15	–0.03	0.22**	0.12
6. College rank						–	0.02	0.11	0.08	–0.02	0.15	0.03
7. Socioeconomic status							–	–0.04	0.02	–0.08	0.01	0.07
8. Maternal autonomy support								–	0.33**	0.44**	0.16	0.24**
9. Paternal autonomy support									–	0.38**	0.11	0.18*
10. Self-determination										–	0.18*	0.21*
11. Autonomous motivation (diet)											–	0.68**
12. Autonomous motivation (exercise)												–

Note: \* $P \leq 0.05$ , \*\* $P \leq 0.01$ .

accounted for 20% of the variance in the model. The addition of maternal and paternal autonomy support did not significantly contribute to the model. Neither maternal ( $t = 0.91$ ,  $P = 0.34$ ) nor paternal autonomy support ( $t = 0.76$ ,  $P = 0.45$ )  $\beta$  weights were significant. A significant positive relationship of parental autonomy support with self-determination ( $P < 0.001$ ) as well as of self-determination with adolescent diet motivation ( $t = 2.21$ ,  $P < 0.05$ ) was found (Table 4).

## Hypothesis 2

Lastly, hierarchical regression step-wise regression was conducted to predict adolescent exercise motivation. Age displayed a nonsignificant but positive relationship ( $t = 1.63$ ,  $P = 0.10$ ) with the adolescent's motivation for exercise and accounted for 4% of the variance. Neither maternal nor paternal autonomy support predicted adolescent exercise motivation and only explained an additional 5% of the variance. Self-determination was also nonsignificant in the model ( $F[4, 128] = 3.47$ ,  $P = 0.10$ ) (Table 4).

## Discussion

The findings of the current study, in conjunction with previous research,<sup>11,31,40</sup> suggest that parental autonomy support remains important to adolescent internalization of beliefs and attitudes even as they prepare to enter into adulthood. While both maternal and paternal autonomy

support demonstrated significant influence on adolescent self-determination, maternal autonomy support was more influential. Child and adolescent research about parental roles of mothers and fathers implies that mothers are generally more involved and have greater influence on the adolescent's day-to-day activities, as well as on the adolescent's social environment, while fathers are more central in guiding the outer world relationships of their offspring.<sup>46,47</sup> Research has suggested that maternal and paternal autonomy support had similar influence on the adolescent's relative autonomy in the specific domain of academics; however, only maternal autonomy support was predictive of adolescent autonomy in the specific domain of friendship, again suggesting that mothers are more involved in adolescent socialization through day-to day interactions.<sup>40</sup> In contrast, other investigators found that paternal autonomy support, in comparison to maternal autonomy support, was a more powerful predictor of identified/integrated self-regulation (indirect measure of self-determination) on prosocial values,

**Table 3** Summary of hierarchical multiple regression for parental autonomy support predicting adolescent self-determination

Predictor	B	SE B	$\beta$	R <sup>2</sup>
Maternal autonomy support	0.351	0.049	0.35***	0.19
Paternal autonomy support	0.264	0.043	0.26***	0.06
Total R <sup>2</sup>				0.26
N				132

Note: \*\*\* $P \leq 0.001$ .

**Table 4** Summary of hierarchical multiple regression analysis of adolescent autonomous motivation for diet incorporating self-determination as a mediator

Predictor	B	SE B	$\Delta R^2$	$\beta$
Step 1			0.20	
Age	0.34	0.78		0.34***
Family structure	0.28	1.16		0.29***
Gender	0.19	1.11		0.19***
Step 2			0.01	
Maternal autonomy support	0.01	0.07		0.01
Paternal autonomy support	0.01	0.06		0.01
Step 3			0.03	
Self-determination	0.19	0.11		0.19*
Total R <sup>2</sup>			0.23	
N			132	

Notes: \* $P < 0.05$ ; \*\*\* $P \leq 0.001$ .

**Table 5** Summary of hierarchical multiple regression analysis of adolescent autonomous motivation for exercise incorporating self-determination as a mediator

Predictor	B	SE B	$\Delta R^2$	$\beta$
Step 1			0.04	
Age	0.15	0.74		0.16
Step 2			0.05	
Maternal autonomy support	0.13	0.06		0.13
Paternal autonomy support	0.07	0.05		0.07
Step 3			0.01	
Self-determination	0.13	0.10		0.13
Total $R^2$			0.10	
N			132	

also suggesting that fathers may play a more global, distant role on how adolescents develop self-determination.<sup>11</sup>

Demographic variables of age, sex, and family structure accounted for 20% of the variance in the dietary motivation model. The sample was comprised of older adolescents aged 18–20 years (mean = 18.52 years). While the age range was narrow, findings suggested older adolescents were more motivated to eat a healthier diet than were younger participants. The significant and positive relationship of age on dietary motivation may be due to an increase in nutritional knowledge as the adolescent matures.

In this study, females were more likely to be motivated for a healthy diet than were males, a finding that is consistent with the literature.<sup>48–50</sup> Family structure was also significant in the prediction of AMD. Surprisingly, findings suggested that adolescents from two-parent biological families displayed less motivation for healthy dietary behaviors than those from other family structures. The finding that adolescents from two biological families demonstrated less motivation for healthy dietary behavior, in comparison to all other family structures, may be partially explained by the operationalization of this nominal variable. Only two-parent biological families were specifically examined in the analysis. The combination multiple family structures in the operationalization of this variable may have led to inflated significance of the non-two-parent biological family structures.

While dietary motivation of this older adolescent, college student population had not been investigated previously, the significant, positive relationship of self-determination with adolescent motivation for diet further confirmed the contribution of self-determination to health-oriented behaviors. Young college students who exhibit higher levels of self-determination appear to be more likely to be motivated to partake in a healthier diet than those with lower levels of self-determination. Similarly, another study found

that relative autonomy in decision-making was a significant antecedent to dietary attitude and perceived dietary behavioral control.<sup>51</sup> In turn, dietary attitude and dietary perceived behavioral control were predictive of dietary intentions and dietary intentions were predictive of a more healthy diet.

In contrast to the prediction of motivation for diet, the lack of significant influence of adolescent self-determination on motivation for exercise behaviors was surprising. Previous studies have consistently reported a positive, significant relationship between adolescent self-determination and domain specific outcomes; however, those studies have either evaluated autonomy as an indirect measure of self-determination,<sup>11,31</sup> or measured domain specific self-determination.<sup>40</sup> The evaluation of adolescent self-determination and motivation for diet and exercise in the present study may have been hindered by the assessment of generalized, as opposed to a domain specific, self-determination, such as adolescent's self-determination for diet and/or exercise.

Alternatively, the failure to find a relationship of adolescent self-determination on motivation for exercise in the current study could be because exercise behavior in older adolescents is influenced largely by controlled, rather than autonomous, motivations. For example, a study that examined the impact of relative autonomous motivation on the intentional behaviors of diet and exercise reported that increased relative autonomy was positively related to exercise intentions, yet they also found that subjective norms (ie, controlled motivations), such as perceived pressure to lose weight or to feel more confident in their looks, also independently predicted exercise intentions.<sup>51</sup> In addition, a second study found that more controlled motivations, as well as autonomous motivation, were commonly associated with exercise frequency among middle adolescents.<sup>52</sup> In fact, adolescents who verbalized more controlled motives for exercise reported greater exercise frequency than adolescents who reported autonomous exercise motives. This finding suggests that older adolescents' motivation to exercise may not be influenced by their general sense of self-determination in the college setting.

This study supports that the relationship between parent and adolescent remains significant and influential even as the adolescent nears adulthood. The positive relationship between parental autonomy support and self-determination suggests that promotion of autonomy remains important during latter adolescence and that adolescent self-determination may influence health behavior decisions. Development of a greater understanding of the antecedents of adolescent health

motivation is particularly relevant to the nursing profession. Nurses are at the forefront of health behavior teaching in their daily practice. Strategies that increase health behavior motivation are needed to improve positive health decisions and reduce negative outcomes in adolescents. Familial influences are particularly important to examine as the adolescent nears adulthood due to the evolution of the parental influence that continues during this stage of development. By having a deeper knowledge of older adolescent motivational influences, nurses can continue to develop new and innovative methods to promote improved health behaviors in adolescents.

## Limitations

As with any study, there are inherent limitations. The lack of direct measurement of adolescent diet and exercise behaviors limits the interpretation of the study's results. Convenience sampling, use of a single data collection site, unequal sex representation, disproportionate African-American representation, and the cross-sectional study design limited generalizability of the present study. The high percentage of the sample living outside the parental home may also have been influential in the findings. The dichotomous nature of the family structure variable limited the interpretability of these findings. Family structures were collapsed into a dichotomous variable consisting of two-parent biological families and all other families and this may have led to inflated significance of non-two-parent biological family structures.

## Conclusion

Results of this study clearly indicate that both parents remain influential throughout adolescence. Perceived parental autonomy support was highly predictive of adolescent self-determination and the relationship for both mothers and fathers was highly significant and positive. While mothers appear to be the most influential on adolescent self-determination, fathers also play an important role. The importance of evaluation of both parents separately when conducting adolescent research cannot be overstated. In addition, future work might consider the inclusion of other forms of autonomy support (ie, peers) when evaluating internalization of attitudes and beliefs regarding behaviors in older adolescents.

## Disclosure

None of the authors of this manuscript report a conflict of interest, direct or indirect, related to this work.

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