

Influence of Peers and Friends on Overweight/Obese Youths' Physical Activity

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SALVY, S.-J., J.C. BOWKER, L. GERMEROTH, and J. BARKLEY. Influence of peers and friends on overweight/obese youths' physical activity. *Exerc. Sport Sci. Rev.*, Vol. 40, No. 3, pp. 127–132, 2012. *This review offers a theoretical framework to account for the effects of peers on youths' physical activity. Our research indicates the following: 1) that the youth are more physically active in the presence of friends and peers than in the presence of family members or when alone, 2) peers and friends increase overweight/obese youths' motivation to be physically active, 3) peers' weight status does not moderate the effect of peers on youths' physical activity, and 4) experiencing negative peer interaction, such as ostracism, decreases physical activity in youth. We propose that the consideration of the peer social context as a contributor to physical (in)activity and maintenance of overweight status may further our understanding of physical and behavioral health trajectories and improve prevention and intervention efforts.* **Key Words:** physical activity, social influences, peer relationships, obesity, children and adolescents

INTRODUCTION

Regular physical activity and active play during childhood and adolescence are associated with several physical and psychological benefits, such as increased musculoskeletal and cardiovascular fitness, decreased stress, and greater self-confidence (12). Unfortunately, studies consistently have found that many youth, especially those that are overweight and obese, are less physically active, perceive physical activity more negatively (23), and find sedentary activities more reinforcing than physical activities when compared with normal-weight youth (5). These findings are worrisome because the lack of physical activity and choice of sedentary behaviors along with overeating/unhealthy eating in children and adolescents comprise the “big two” contributors to the obesity epidemic (2). For these reasons, there have been considerable recent efforts to better understand the factors promoting or deterring overweight youth from engaging in physical activity.

It has been well established that significant others serve as primary socializing agents in physical activity contexts (28).

Yet, most research on social influence on youth sport and physical activity has focused on the role of adults in governing youth psychosocial and behavioral outcomes (e.g., coaches, teachers, and parents). In recent years, however, there has been growing empirical attention paid to the role that peers and friends may play. For instance, there has been increased interest in both positive (e.g., friendships) and negative peer experiences (e.g., peer rejection, peer victimization) as contributing factors that are either promoting or detracting youth from involvement in physically active leisure (1,6,22,24,30). Initial evidence indicates that positive experiences with peers and friends can provide opportunities for youth to be physically active but that overweight/obese youth often are lacking such social networks. Given this new focus in research and emerging evidence, there is a clear need for a review of the existing literature on peers and physical activity. The lack of a review of the literature impedes our ability to ascertain clearly from the extant literature: (a) why and under what circumstances peers are strong contributors to physical (in)activity, and (b) how to most effectively translate this knowledge to inform effective prevention and treatment approaches.

The overarching goal of the present article is to review the experimental and correlational research on the effects of peers on physical (in)activity during childhood and adolescence and to offer a theoretical framework to account for these effects and, more specifically, the relations between peer experiences and physical (in)activity in overweight/obese youth. Children and adolescents are more likely to be active physically when in the presence of peers and when their peer relationships

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are positive and rewarding (14). However, we propose that the peer social context of childhood and adolescent obesity, characterized by social stigma and peer difficulties, contributes to and reinforces overweight/obese youths' lack of physical activity and choice of sedentary alternatives, which in turn, promotes the maintenance of their overweight status.

For the sake of conciseness, we opted to focus strictly on nonclinical studies. However, it should be noted that some clinical research also has investigated the benefits of team sports for the treatment of youth obesity (29,35), with similar guiding premises as the ones outlined here.

THE PEER SOCIAL CONTEXT, PHYSICAL ACTIVITY, AND OBESITY

Research consistently shows that peer relationships offer important opportunities for companionship and recreation and that most physical activities during childhood and adolescence, whether they are organized sports or spontaneous physical activity, involve some form of social play that requires peers or play partners (e.g., kickball, tag, softball) (19). Therefore, it should not be too surprising that a number of empirical studies have found that children and adolescents are more active physically when in the presence of peers (4,13,22,24); that youth who report a greater presence of peers in their lives also report engaging in greater physical activity (4,24); and that lonely children, who often are friendless and rejected by peers, report the least amount of physical activity. In one study, we examined whether variability in young adolescents' (12–14 yr) physical activity could be explained by their social company (or lack thereof) using an experience sampling methodology. For seven consecutive days, participants carried two-way pagers and described their activities and the social context. As expected, both overweight/obese and nonoverweight young adolescents were found to engage in less intense activity when alone and when in the presence of family members than when in the presence of other friends and peers. However, overweight/obese youth reported being alone on more occasions than nonoverweight youth, which, we argue, explains, in part, why they are less physically active than their nonoverweight peers (24,26). The finding that overweight youth are alone more often than nonoverweight youth is consistent with evidence indicating that overweight/obese children have fewer friendships and are less likely to have reciprocated or mutual friendships than normal-weight children (34).

Most research on peer influence and physical activity has been limited by nonexperimental designs, which do not allow for causal inference. However, we recently assessed the physical and sedentary activity of nonoverweight and overweight/obese boys (8–12 yr old) in three experimental social contexts: 1) an alone condition, 2) in the company of an unfamiliar peer of similar weight (two nonoverweight or two overweight/obese children paired together), and 3) in the company of an unfamiliar peer of different weight (one nonoverweight and one overweight/obese child) (22). Participants had free access to several physical and sedentary activities in a gymnasium setting for a total of 30 min. Physical activity was assessed via accelerometry, and participants' time allocation between sedentary and physical activities was recorded in minutes. Results

indicated that overweight/obese children accumulated significantly fewer accelerometer counts and allocated significantly more time to sedentary activities in the alone condition than the nonoverweight children. Yet, when paired with another child, overweight/obese children increased their accelerometer counts and decreased the time allocated to sedentary activity to a level that was similar to their nonoverweight peers. This effect was consistent whether overweight/obese children were paired with a nonoverweight child or a similarly overweight/obese child. Therefore, overweight/obese children seem to benefit from the company of peers regardless of the weight status of the peer. However, this is the only study to assess the influence of peers of differing weight on physical activity behavior, and it only examined boys. Additional research examining this effect in different contexts and in both sexes is warranted.

The presence of peers seems to promote greater physical activity in all children and adolescents, but why? One possibility is that the presence of peers increases youths' motivation to engage in physical activity. Past research has indicated that companionship provided by friends is associated with positive affect during physical activity (28); it is likely that these positive feelings increase the enjoyment of and youths' motivation to engage in physical activity (4). It seems that only one study, originating from our laboratory, has directly tested this hypothesis. We examined the impact of three social contexts: 1) an alone condition, 2) a peer condition (with an unfamiliar peer), and 3) a friend condition (with a mutual friend), on young adolescents' (12–14 yr old) motivation to be physically active and their actual physical activity behavior (*i.e.*, distance biked) in a laboratory environment (24). Motivation to be physically active was measured using a computerized relative reinforcing value task, which required participants to perform work — in the form of computer-mouse button presses — to earn points for access to physical and/or sedentary activities. Findings indicated that the presence of a friend not only increased the reinforcing value of physical activity relative to being sedentary in both overweight/obese and nonoverweight youth (*i.e.*, participants performed more work and earned more points for physical activity) but also increased youths' actual physical activity as participants biked a greater distance when in the presence of a friend than when alone.

Many youth may have been motivated to be more physically active because they wished to behave in a normative fashion. Previously, children have indicated that they believed physical activity with their peers to be a normative behavior and that belief was associated with their intention to be physically active (21). It also has been found that the intent to participate in physical activity is predictive of physical activity in children. If viewing physical activity as a normative behavior increases children's intent to participate, then the presence of a peer in our experimental studies may have increased children's motivation to participate in physical activity as it may have been viewed as normative. However, in our study on the effects of peers and friends on youth's motivation to engage in physical activity (25), we also found that overweight/obese young adolescents were more motivated to exercise and biked a greater distance when in the presence of an unfamiliar peer than when they were alone, whereas this condition difference was not found for nonoverweight adolescents.

Taken together, findings provide support for the hypothesis that the presence of friends increases both overweight/obese and nonoverweight youths' motivation to be physically active (or their beliefs about what is normative). Yet, findings also indicate that overweight/obese youth, but not nonoverweight youth, increase their motivation to be physically active and their physical activity behavior in the presence of an unknown peer, perhaps because of impression management strategies. Impression management, the act of an individual modifying their behavior to affect others' impressions of oneself (17), also has been implicated in research on eating (20), another health behavior. It has been consistently found that when eating in social settings, obese individuals reduce their caloric consumption in an effort to convey a favorable impression in others (see (11) for a review). Similarly, overweight/obese children and adolescents may be motivated to increase physical activity in the presence of other youth, whether they be friends or unknown peers, to create a favorable impression. This may be done in an effort to combat the negative stigma attached to overweight individuals who are sedentary and who are the victims of weight-related criticism, which most overweight individuals encounter from both unfamiliar peers and close friends (21). In fact, it is important to note that studies have shown consistently that the prejudice against overweight/obese individuals begins to develop during early childhood (27).

It also is possible that because overweight/obese youth spend considerable time alone, they are more sensitive to any type of peer interaction than nonoverweight youth. Social facilitation refers to the increase in performance as a result of the presence of others (33). According to Zajonc (37), the presence of others serves as a source of arousal. Arousal increases the likelihood that an individual will make habitual or well-learned and dominant responses, which improves performance on simple tasks (see Yerkes-Dodson Law). The relative novelty of positive interaction with an unknown peer may be more arousing for overweight/obese youths than nonoverweight youth, which may, in turn, increase the performance of a simple task: physical activity.

Clearly, additional research will be needed to test the mechanisms accounting for our findings. Nevertheless, our research and the research of others (4,6,30) strongly suggest that the presence of peers and friends may increase physical activity during childhood and adolescence by providing a social structure or context that fosters motivation to be active and actual physical activity. One reason that overweight children and adolescents may be less physically active is because they spend more time alone than their nonoverweight peers. Another potential social factor accounting for overweight youths' lack of involvement in physical activities is the negative nature of social interactions and the weight stigmatization associated with these settings. We review evidence to support this contention in the next section.

VARIABILITY IN THE AFFECTIVE NATURE OF PEER EXPERIENCES AND PHYSICAL ACTIVITY

A review of the literature indicates that the presence of peers does not always increase physical activity, and one likely determinant of the effects of peers on physical activity relates

to the affective nature of youths' peer relations. Indeed, it seems that only peer experiences that are characterized by positive interactions, mutual affection, cooperation, and respect increase the probability of engaging in physical activity. For instance, researchers have shown consistently that perceptions of positive peer encouragement and support in both overweight/obese and nonoverweight children are associated positively with children and adolescents' participation in physical activity (14). These associations have been found in concurrent and longitudinal studies. One longitudinal study, for example, showed that girls who remain active physically as they transition into adolescence and adulthood also report increased levels of perceived peer support over time (3).

In recent years, it has become clear that overweight/obese youth often are teased by their peers because of their physical appearances (10); also, they often are subjected to such negative group-level peer experiences as peer rejection (*i.e.*, active dislike by the larger peer group), ostracism (*e.g.*, intentional exclusion or ignoring of an individual or group by another individual or group) (36), and physical and verbal victimization. Growing evidence suggests that the lack of positive peer experiences and the presence of hostile, negative, and critical peer experiences decrease physical activity in both overweight/obese and nonoverweight youth. For example, recent work in our laboratory has focused on physical activity in relation to ostracism. Ostracism is a common occurrence for many individuals, especially the overweight/obese (16). The initial emotional reaction to all types of ostracism typically is strong and negative (36). Research has indicated that even a single episode of ostracism negatively influences feelings of belonging, self-esteem, cognitions, and mood, as indexed through self-report and physiological measures of stress and reactivity (31).

In one study, we tested the causal impact of ostracism on children's (8–12 yr) physical activity using a simulated ostracism paradigm (1). During two separate laboratory sessions, children played a computerized ball-tossing game in which they experienced an episode of inclusion (*i.e.*, a control condition) in one session and exclusion (*i.e.*, an ostracism condition) in the other session. After playing the computer game, children were given free-choice access to a variety of physical and sedentary activities in a gymnasium for 30 min. Physical activity was monitored via an accelerometer and a stopwatch. Children accumulated 22% fewer accelerometer counts and 41% more minutes of sedentary activity in the ostracized condition relative to the included condition. The effect in this present study was not body weight dependent. In addition, liking and ratings of perceived exertion of the activity sessions were not significantly different between conditions. Therefore, it would appear that neither the changes in liking nor perceived exertion is the mechanism behind the decrease in physical activity after experiencing a bout of ostracism. Instead, we have postulated that the mechanism behind this effect may be "pain." Neurologically, the "pain" experienced during ostracism is similar to experiencing physical pain (36). This experience impairs executive function as the individual becomes preoccupied with finding a coping mechanism for their "pain." The process of identifying a coping mechanism can impair executive function, which can induce a state of apathy (36). This may promote participation in sedentary

options. Although additional research will be needed to better understand this phenomenon and the mechanisms behind it, these results provide the first experimental support for the hypothesis that peer difficulties lead to increased sedentary behavior and decreased physical activity in children. The next step will be to further evaluate whether the aforementioned effects are strong, especially for overweight/obese youth.

Although experimental research on the effects of negative peer experiences on physical activity is limited to the single study from our group, nonexperimental research in this area is more prevalent. These nonexperimental studies have revealed consistently an inverse relationship between stressful peer experiences and numerous health-related and psychosocial adjustment outcomes (9). For instance, weight criticism during physical activity and other verbal (e.g., teasing), physical, and relational (e.g., spreading rumors) manifestations of victimization have been shown to be predictive of increased depressive symptoms, time spent alone and feelings of loneliness as well as reduced sports enjoyment, children's self-perceived activity relative to their peers, and overall physical activity (6,9,14,30). Longitudinal research will be needed to examine these associations over time, but taken together, they suggest a potentially serious issue confronting children who experience peer victimization and weight criticism. If peer difficulties occur as a result of a child being overweight, the peer difficulties could contribute to further obesogenic behaviors (e.g., reduced physical activity) that promote maintenance of overweight status and further peer difficulties. Therefore, this potential "vicious cycle" could have disastrous long-term health consequences for the overweight child.

Although untested, we can speculate that negative peer experiences also may decrease the reinforcing value of physical activity for many children and adolescents, which, in turn, leads to decreased physical activity (6). Children and adolescents who encounter hostile and rejecting peers likely stop enjoying activities, such as physical activities, that involve their peers. Alternatively, negative peer experiences might be the consequence of poor physical activity skills, which, in turn, leads to decreased physical activity, as there is some indication that overweight/obese youth may be less coordinated than nonoverweight youth (8). It is clear that research will need to test the direction of effects and the likely bidirectional associations between peer experiences, physical activity (motivation for and engagement in), and physical activity skills. However, these findings suggest that it is not simply the presence of peers that matters when understanding the associations between peers and physical activity: the affective nature of peer experiences seems to have an impact as well.

CONCLUDING COMMENTS

In this review, we review the extant literature and offer a theoretical framework to account for the effects of the peer social context on youths' physical activity and, in particular, the lack of physical activity in overweight and obese youth. Additional research clearly is needed in this relatively new area of research, but it is safe to say that the presence of peers and friends can increase physical activity (by increasing motivation to be physically active, by increasing the rewarding

value or normative view of physical activity, and/or through social facilitation), whereas a lack of positive relations with peers and friends (via ostracism, peer victimization, or isolation) is associated with decreased physical activity (Fig.). These are particularly worrisome findings as previous research has repeatedly indicated that overweight/obese youth spend more time alone and are more frequently the targets of peer victimization and ostracism than their nonoverweight peers (15,18).

These findings are notable because they offer a possible explanation as to why many overweight/obese youth do not always adhere to clinician recommendations for increased physical activity. If overweight/obese children and adolescents are experiencing greater amounts of ostracism and other negative peer experiences and often are friendless, then they are more likely to be left with the difficult task of performing physical activity alone. As described previously, most physical activity during childhood and adolescence requires peers, and, thus, peer difficulties, and their impact on physical activity, may make it very difficult for overweight/obese children and adolescents to be more physically active. Should this occur, the likelihood of overweight/obese youth losing weight then relies solely on their adherence to dietary recommendations, which reduces the chance of significant weight loss or long-term maintenance of treatment gain. Thus, addressing the peer difficulties of overweight/obese children and adolescents may be useful clinically in designing interventions to increase physical activity in overweight and obese children. It may be difficult to foster new friendships for overweight youth (or any youth), but clinicians may find some success forming physical activity groups that comprise similarly overweight youth. Forming such social networks could help to modify overweight youths' negative perceptions of physical activity, which also is important to change for intervention efforts to be successful. Of course, friends' and peers' influences on children's and adolescents' levels of physically active play are most likely part of an intricate web of complex relations involving youths' individual characteristics (i.e., age, sex), their larger social networks (i.e., romantic relationships, parents, teachers), and other systemic influences (e.g., the school system and the community at large). Thus, prevention and intervention efforts focused on fostering positive peer relations for overweight youth also may need to consider additional factors that impact the child and his/her physical activity and peer relationships.

An additional limitation of the extant literature should be noted. The dearth of theoretically driven experimental research makes it difficult to conclude which factors or mechanisms are responsible for the energizing effects of peers and

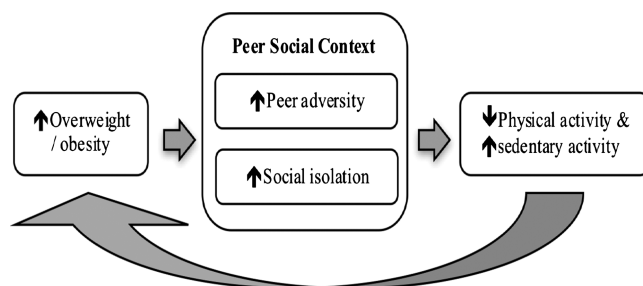


Figure. Impact of social context on overweight/obese youths' physical activity.

friends on children's and adolescents' physical activity. It is possible that observing other youth being physically active creates the impression that such behaviors are normative, which in turn, lead youth to engage in these activities with the objective of conforming or ingratiating themselves in the eyes of the peers and friends (*i.e.*, "fit in"). It also is plausible that youth actively select friends who are similar to themselves in terms of physical activity (because we know that friends tend to be similar to each other in terms of physical activity levels), which, in turn, reinforces physical activity patterns. The presence of others (peers and friends) also may increase the reinforcing value and enjoyment of physical activity, which, in turn, increases the likelihood that youth engage in these activities when given the choice to do so. Longitudinal studies will be critical to better understand the direction of influence, different processes that might be involved, and both selection and socialization effects.

A goal of future research should be to test the specific mechanisms responsible for the impact of peers on youths' physical (in)activity (28). Most interventions reviewed above have focused on young children (6–12 yr old). However, peers and friends may be more influential during adolescence than during childhood as friends and social networks become increasingly important to motivations, psychological well-being, and behaviors during adolescence. It also is during adolescence that peers become more influential than parents in many different ways (7,32).

Nevertheless, this review strongly suggests that to achieve meaningful results, modifications to adolescents' social networks may need to involve fostering new social networks for those adolescents without them or improving negative features of overweight/obese youths' existing peer networks. If impoverished peer networks are left unchanged, sedentary youth who are motivated to change may be unable to do so because they are left with the difficult task of finding new friends and peers who would share in these activities or engaging in physical activity alone.

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