



Perceptions and the role of group exercise among New York City adults, 2010–2011: An examination of interpersonal factors and leisure-time physical activity



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ABSTRACT

Objective. To examine associations of descriptive norms (i.e., behaviors of social group members) and exercising 'with a partner' or 'as a part of a group' on weekly leisure-time physical activity.

Methods. T-tests and adjusted multivariable linear models were used to test the associations between descriptive norms and exercising with a partner or as a part of a group with self-reported leisure-time physical activity using the cross-sectional, population-based New York City Physical Activity and Transit (PAT) Survey 2010–2011 (n = 3806).

Results. Overall, 70.6% of adult New Yorkers reported having physically active friends. Having active friends was associated with increased leisure-time physical activity; however, the effect varied by sex. Compared to those who did not have active friends, males with active friends reported two times more activity (56 min/week) and women reported two and a half times more activity (35 min/week) (both p-values < 0.001). Physically active males and females who usually engaged in leisure-time activities as a part of a group reported 1.4 times more activity than those who exercised alone (both p-values < 0.03).

Conclusions. Descriptive norms and group exercise were associated with leisure-time physical activity among adults. Based on these associations, encouraging group exercise may be an effective strategy for increasing leisure-time physical activity among certain subgroups.

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Introduction

Physically active people have lower rates of chronic diseases and experience higher levels of general well-being (Physical Activity Guidelines Advisory Committee, 2008; Warburton et al., 2006); yet, fewer than half (48%) of adults in the United States are sufficiently active at levels that would confer health benefits (Centers for Disease Control and Prevention, 2012). In a review of 24 qualitative studies, Allender et al. (2006) found that while most people recognize the health benefits associated with physical activity, this was not their main motivation for participation; factors such as weight management, social interaction and support, and enjoyment were more common reasons for engaging in physical activity. The importance of social influences on health-promoting behaviors is becoming increasingly recognized (McNeill et al., 2006; Sallis et al., 2008). Ecological models that include multiple levels of influence, such as the social and physical environments and local policies are particularly well suited for studying

physical activity behaviors (Sallis et al., 2006). As such, a clear understanding of the interpersonal environment associated with physical activity may support the development of comprehensive interventions that lead to effective behavior change.

Social networks provide an opportunity to exert social influence and offer companionship, and social support (Heaney and Israel, 2008). Social norms — the standards against which the appropriateness of behaviors are evaluated — have been described as the least visible yet most powerful influencers of social control (Bettenhausen and Murnighan, 1985). However, norms have shown mixed results for predicting physical activity behaviors (Sassen et al., 2010; Trost et al., 2002; Okun et al., 2002; Armitage and Conner, 2001), likely due to inconsistent terminology (Okun et al., 2002). Descriptive norms, which represent the perception of what behaviors members of social groups engage in, are thought to motivate behavior by providing evidence for effective and adaptive action (Cialdini et al., 1990). There is evidence that descriptive norms, such as observing significant others engage in leisure-time activities, positively influence physical activity behaviors (Ball et al., 2010; Rivas and Sheeran, 2003; Okun et al., 2002; Priebe and Spink, 2011; Emmons et al., 2007). Having physically active friends (i.e., 'friend descriptive norms'), has been shown to be more influential than having physically active family members ('family descriptive norms') in

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predicting physical activity among office workers (Priebe and Spink, 2011) and university students (Priebe and Spink, 2011; Okun et al., 2002). In a study among adult females, Ball et al. (2010) found that descriptive norms predicted physical activity relatively consistently, independent of social support. Exercising with another person or as a part of a group may be associated with increased physical activity because it provides social interaction, a motivator of physical activity behavior (Allender et al., 2006). These social factors cross multiple levels within the context of Ecological Model of Four Domains of Active Living (Sallis et al., 2006) as they are associated with behavior and behavioral settings; and, thus, may support behavior change. Similarly, having an active social network may be an opportunity for social support. While this study focuses on LTPA, the focus on behavioral and physical settings may suggest ways to improve behavioral settings and choices as a part of a more comprehensive approach to improve health.

To date, the influence of descriptive norms and exercising with others on physical activity has not been characterized in a large, diverse, urban population. It is hypothesized that descriptive norms may influence behaviors over which individuals perceive having partial volitional control (Okun et al., 2002); thus, this study focuses on leisure-time physical activity (LTPA) rather than activity that is less under an individual's control (e.g., transit and work-related activity). The objective of this study was to assess the influence of descriptive norms (i.e., having active friends, family members, or neighbors) on LTPA and to assess if exercising 'with a partner' or as 'a part of a group' is associated with further increases in LTPA per week among those who engage in any LTPA.

Methods

Study population

Between 2010 and 2011, the New York City Department of Health and Mental Hygiene (NYC Health Department) conducted the Physical Activity and Transit (PAT) Survey, which has been previously described (Wyker et al., 2013; Immerwahr et al., 2012; Bartley et al., 2013). In brief, the PAT Survey was a random digit dial telephone survey designed to provide estimates of physical activity at the city, borough, and subgroup levels. The PAT survey used an overlapping landline and cell phone sample frame to contact adults in residential households in NYC, with disproportionate (equal-sized) samples from the five boroughs and oversampling in areas with higher levels of obesity. The interview covered multiple aspects of physical activity and select health conditions and behaviors. Self-reported physical activity among those who could walk more than 10 ft was assessed using the Global Physical Activity Questionnaire (GPAQ) (World Health Organization, n/d), which categorizes moderate and vigorous physical activity in bouts of 10 min or more ($n = 3811$). Five respondents were excluded as outliers based on criteria set forth in the GPAQ Analysis Guide ($n = 3806$) (World Health Organization, n/d). The PAT sample was weighted to represent the NYC non-institutionalized adult population. The NYC Health Department Institutional Review Board approved this study as human subjects research.

Key variables

Descriptive norms were assessed using three questions that separately asked if the respondent had friends, adult family members, or neighbors who "exercise, play sports, or do other physical activities". Response levels were binary (Yes/No) for friends and family. Report of active neighbors included a "Don't know" category; however, this was not an association of interest. LTPA was assessed by asking participants if during the last seven days, excluding labor and transport activity, they did "any sports, fitness, or recreational activities that caused an increase in your breathing or heart rate" in bouts of 10 min or more. If the participant responded "Yes", he/she was asked the number of days over the last seven days and on average, how many minutes were spent engaging in these activities. Moderate and vigorous minutes (continuous) were assessed separately and summed together for minutes of moderate-to-vigorous physical activity (MVPA) per week. Respondents who reported any (>0 min/week) LTPA (active

respondents) were asked if they usually participate in activities: 'Alone', 'With another person', or 'As a part of a group'.

Demographic characteristics (age, sex, race/ethnicity, education, poverty status, and nativity) were self-reported. Race/ethnicity was assessed using two questions on Hispanic ancestry and race, and was categorized as non-Hispanic white, non-Hispanic black, Hispanic, non-Hispanic Asian, and non-Hispanic other (hereafter referred to as 'white', 'black', 'Asian', and 'other'). Poverty was based on annual combined household income, and was grouped according to federal poverty guidelines ($<200\%$, $200\text{--}399\%$, $\geq 400\%$ of the federal poverty level (FPL)). Nativity was defined as self-report of being born in the U.S. or elsewhere. Puerto Ricans and those born in other U.S. territories were classified as being U.S.-born.

Statistical analyses

The association of mean self-reported LTPA with descriptive norms and exercising with others were assessed overall and by demographic characteristics; differences were assessed using t-tests. Multivariable linear regression models were created to assess the demographic factors associated with mean LTPA and descriptive norms and exercising with others. Covariates adjusted for included age, race/ethnicity, education, poverty, and nativity. Analyses were stratified by sex. Data were analyzed and weighted to represent NYC adults using SAS-callable SUDAAN v.10 (Research Triangle Institute, Research Triangle Park, North Carolina).

Results

Overall, 41.6% (95% CI: 38.1%, 45.2%) of male and 30.7% (95% CI: 27.7%, 33.7%) of female New Yorkers reported any leisure-time MVPA. Males reported 125.1 ± 9.0 min/week and females reported 72.3 ± 6.7 min/week. Over 70% of respondents were aged 25–64 years, slightly more than half (53.2%) were female, nearly half (48.2%) were black or Hispanic and 43.6% were below 200% FPL (Table 1).

Table 1
Demographic characteristics, PAT Survey, New York City, 2010–2011.

	Study subsample			
	n	%	Weighted n	Weighted %
Total sample	3806	95.6		
Age, mean (SEM)	50.4 (17.5)		44.1 (0.38)	
Age group				
18–24	277	7.3	807,000	13.5
25–44	1174	30.9	2,466,000	41.2
45–64	1449	38.2	1,870,000	31.2
65 +	898	23.6	850,000	14.2
Sex				
Male	1542	40.5	2,806,000	46.8
Female	2264	59.5	3,193,000	53.2
Race/ethnicity				
White, non-Hispanic	1654	43.5	2,164,000	36.1
Black, non-Hispanic	909	23.9	1,312,000	21.9
Hispanic	849	22.3	1,579,000	26.3
Asian, non-Hispanic	315	8.3	819,000	13.7
Non-hispanic, other	79	2.1	124,000	2.1
Poverty/income ^a				
$<200\%$ FPL	1374	38.4	2,458,000	43.6
200–399% FPL	611	17.1	884,000	15.7
400 + % FPL	1355	37.8	1,735,000	30.7
Education				
Less than high school	495	13.1	1,161,000	19.4
Grade 12 or GED	941	24.8	1,481,000	24.8
Some college	815	21.5	1,399,000	23.4
College graduate	1540	40.6	1,938,000	32.4
Country of birth				
U.S. born	2335	61.4	3,117,000	52.0
Non-U.S. born	1465	38.6	2,873,000	48.0

^a "Don't know" category is not presented here, thus percentages do not sum to 100%.

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