APHA 2015 Poster

Misperception of Peer Norms is Key to Predicting Adolescent Tobacco Use Across Diverse School Settings and Student Types

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1.Abstract

Background

Previous research has shown that student norms predict personal tobacco use. This study distinguishes between actual peer norms (whether tobacco is used among the majority in a specific grade and the most common attitude about tobacco use) and personal perceptions of peer tobacco use norms (one's personal estimate about whether the majority of students in a specific grade use tobacco and how often, and one's perception of the most common attitude about tobacco use).

Methods

We used data collected from 27,545 students (grades 6-12) across 63 schools in 11 regionally diverse states from 1999 to 2014 via anonymous online surveys with an average response rate of 79%. We calculated the extent of misperception of peer norms, and used multilevel logistic regression models to estimate the simultaneous power of actual and perceived peer norms to predict personal tobacco use.

Results

Although 77% of students said that tobacco use was never a good thing, 64% of students thought that others in their grade thought occasional or regular tobacco use was okay. Similarly, although 78% of students reported never using tobacco, 67% of students perceived that a majority of students in their grade use tobacco monthly or more often. This dramatic reign of misperception was found consistently across schools of different sizes and economic status, as well as for both males and females and across racial/ethnic categories. Perception of the attitudinal norm was highly predictive of personal tobacco use attitude. Moreover, perceiving same-grade peers to use tobacco either occasionally or regularly were both strong predictors of personal tobacco use even after adjusting for the actual prevalence of tobacco use in one's grade, one's personal attitude about tobacco use, and several individual and school-level risk factors. Very similar results were found when using opposite-gender and same-gender perceived and actual norms as predictors.

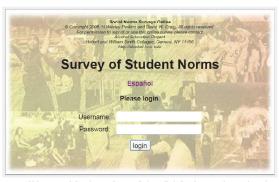
Conclusion

These results suggest the potential importance of interventions to correct misperceptions about adolescent tobacco use norms, regardless of student and school characteristics.

2. Sample Characteristics

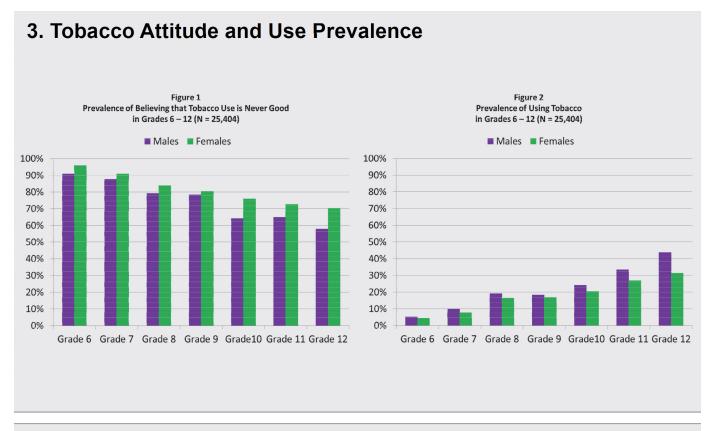
Table 1. School-Level Demographics		
Number of schools	63	
Number of middle schools (grades 6-8, 6-7, or 7-8)	23	
Number of intermediate high school (grades 9-10)	1	
Number of high Schools (grades 9-12)	37	
Number of K-12 schools where grades 9-12 sampled	2	
Number of states (AZ,CO,ID,IN,IA,ME,MA,MT,NJ,NY,WA)	11	
Average response rate	79%	
Years of data collection	1999-2014	
	2000 2021	
	Percent of	
	sample	
1999-2002	26%	
2003-2006	45%	
2007-2010	17%	
2011-2014	12%	
Number of grade cohorts	216	
Average grade cohort size	128 ± 97	
	Number of	
	schools	
Whites were a minority (<50%) with low of 28%	7	
Whites ranged between 50% and 89%	29	
Whites were 90% or higher	23	
Race information not reported	4	
Hispanic less than 10%	36	
Hispanic between 10 and 40%	20	
Hispanic greater than 40%	3	
•		
Black less than 5%	50	
Black between 5 and 25%	5	
Black more than 25%	4	
Less than 10% qualifying for free lunch or reduced lunch	13	
Between 10 and 25% qualifying for free lunch or reduced	13	
lunch	11	
Between 25 and 50% qualifying for free lunch or reduced		
lunch	26	
Over 50% qualifying for free or reduced price lunch	5	
Not reporting fee or reduced lunch	8	
Schools that are private or parochial	5	
ostrosis that are private or paroental	,	
School geographical areas		N of students
Urban/Suburban	21	16085
Rural	42	11460

N of sample		27545	
Percent male		49.5%	
Percent female		50.5%	
			% within
Grade level distribution		N	middle
	Grade 6	2264	32%
	7	2543	36%
	8	2293	32%
Total number of middle school students		7100	
			% within
		N	high schools
	Grade 9	6350	31%
	10	5572	27%
	11	4760	23%
	12	3763	18%
Total number of high school students		20445	

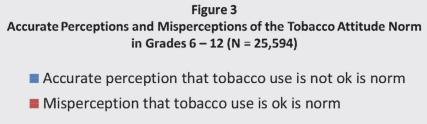


Which statement below chewing tobacco) do you					gurettes	cigurs, a	···u
(select one)							
Tobacco use is never a g	ood thing to do.						
Occasional tobacco use is	s ok, but not daily u	se.					
Daily tobacco use is ok if	that's what the ind	ividual wants	to do.				
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your grade? (select one)							
(Science one)							
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a. Yourself	Never	times per year	Once a month	Twice a month	Once a week	Twice a week	Daily
b. Your friends	0	0	0	0	0	0	0
c. Students in your grade	0	O	0	D	0	0	0
d. Males in your grade	0	0	0	0	0	0	0
e. Females in your grade		0		0		0	
f. High School Juniors and Seniors	0	0	0	0	0	0	0



4. Perception of Peer Tobacco Attitude and Use Norms by Grade



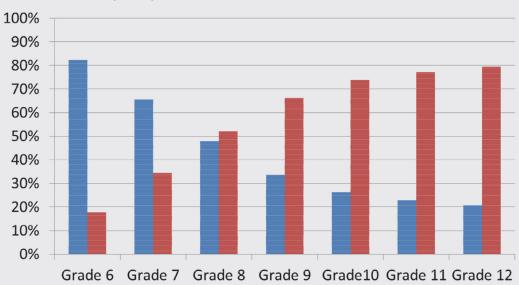
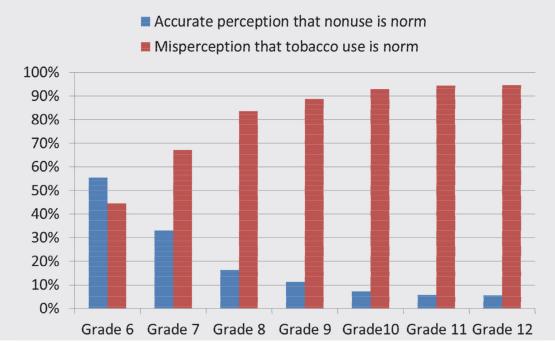


Figure 4
Accurate Perceptions and Misperceptions of the Tobacco Nonuse Norm in Grades 6 – 12 (N = 26,142)



5. Misperception of the Tobacco Nonuse Norm by Grade, Nonuse Prevalence, School Size, Prevalence of Subsidized Lunch Participation, Gender, Race/Ethnicity

Table 3. Misperception of tobacco nonuse norm for same-grade by grade and by high and moderate prevalence of nonuse

			Percent misperceiving	
		Tobacco Non-	actual norm of nonuse	Median level of
Grade	N of students	Use Prevalence	among same grade	misperceived use
6	N=2162	High	45%	1-2 times per year
	=	Moderate	-	-
7	N=2467	High	67%	once a month
	-	Moderate	-	-
8	N=1778	High	81%	once a month
	N=454	Moderate	96%	once a week
9	N=5223	High	88%	twice a month
9	N=959	Moderate	95%	once a week
10	N=3807	High	92%	twice a month
	N=1537	Moderate	96%	once a week
11	N=1382	High	90%	twice a month
11	N=3130	Moderate	96%	once a week
12	N=361	High	82%	once a week
12	N=2882	Moderate	96%	once a week

Notes: High = 76-100% nonuse; Moderate = 51-75% nonuse. In 9 (of 216) schoolgrade cohorts (only 1 since 2005), tobacco use was normative. These 9 school-grade cohorts (representing 2% of students) were removed from the analysis of students' perceptions of school-grade cohort norms.

Table 5. Misperception of same-grade tobacco nonuse norm by grade and high and low school-wide prevalence of students with subsidized lunch

		Prevalence of	Percent misperceiving	NA diambanda d
Grade	N of students	subsidized school lunch	actual norm of nonuse among same grade	Median level of misperceived use
	N=1584	High	51%	1-2 times per year
6	n=578	Low	26%	1-2 times per year
7	N=1559	High	73%	once a month
/	N=885	Low	58%	1-2 times per year
8	N=1361	High	84%	once a month
8	N=842	Low	83%	once a month
9	N=2475	High	93%	once a week
9	N=2941	Low	88%	twice a month
10	N=1925	High	95%	once a week
10	N=2691	Low	93%	twice a month
11	N=1705	High	96%	twice a week
11	N=2170	Low	94%	once a week
12	N=943	High	97%	twice a week
12	N=1676	Low	95%	once a week

Notes: High = 25%+ of students; Low < 25% of students. In 9 (of 216) school-grade cohorts (only 1 since 2005), tobacco use was normative. These 9 school-grade cohorts (representing 2% of students) were removed from the analysis of students' perceptions of school-grade cohort norms.

Table 4. Misperception of same-grade tobacco nonuse norm by grade and size of school population

			Percent misperceiving actual norm of nonuse	Median level of
Grade	N of students	Size of School	among same grade	misperceived use
6	N=1284	Large	40%	1-2 times per year
	N=878	Small	52%	1-2 times per year
7	N=1227	Large	65%	1-2 times per year
	N=1240	Small	69%	once a month
8	N=1063	Large	82%	once a month
	N=1169	Small	85%	twice a month
9	N=3970	Large	90%	twice a month
	N=2212	Small	86%	twice a month
10	N=3402	Large	94%	twice a month
	N=1942	Small	90%	once a week
11	N=2732	Large	95%	once a week
- 11	N=1780	Small	93%	once a week
12	N=1873	Large	96%	once a week
	N=1370	Small	92%	once a week

Notes: For grades 6-8 Large = 500+; for grades 9-12 Large = 1000+. In 9 (of 216) school-grade cohorts (only 1 since 2005), tobacco use was normative. These 9 schoolgrade cohorts (representing 2% of students) were removed from the analysis of students' perceptions of school-grade cohort norms.

Table 6. Misperception of tobacco nonuse norm for same-grade by grade and gender*

			Percent misperceiving actual norm of nonuse among	Median level of
Grade	N of students	Gender	same grade	misperceived use
6	N=1062	Males	44%	1-2 times per year
	N=1068	Females	45%	1-2 times per year
7	N=1242	Males	66%	1-2 times per year
	N=1183	Females	68%	once a month
8	N=1053	Males	81%	once a month
	N=1122	Females	86%	once a month
9	N=2984	Males	86%	twice a month
	N=3084	Females	92%	twice a month
10	N=2572	Males	91%	twice a month
	N=2698	Females	95%	once a week
11	N=2201	Males	93%	once a week
	N=2285	Females	96%	once a week
12	N=1568	Males	94%	once a week
	N=1652	Females	95%	once a week

^{*} In 9 (of 216) school-grade cohorts (only 1 since 2005), tobacco use was normative. These 9 school-grade cohorts (representing 2% of students) were removed from the analysis of students' perceptions of school-

Table 7. Misperception of tobacco nonuse norm for same-grade males and females, separately, by grade and gender*

		Misperceived same-grade male norm			Mispe	perceived same-grade female norm		
Grade	Gender	N of students	Percent misperceiving actual norm of nonuse	Median level of misperceived use	N of students	Percent misperceiving actual norm of nonuse	Median level of misperceived use	
6	Males	N=1060	46%	1-2 times per year	N=1059	30%	1-2 times per year	
	Females	N=1068	52%	1-2 times per year	N=1066	35%	1-2 times per year	
7	Males	N=1236	67%	once a month	N=1234	47%	1-2 times per year	
/	Females	N=1182	72%	once a month	N=1179	55%	1-2 times per year	
-	Males	N=1062	80%	once a month	N=1066	66%	once a month	
8	Females	N=1113	85%	once a month	N=1118	78%	once a month	
-	Males	N=2909	86%	twice a month	N=2932	76%	once a month	
9	Females	N=3026	92%	once a week	N=3035	85%	twice a month	
	Males	N=2565	91%	once a week	N=2562	83%	twice a month	
10	Females	N=2685	95%	once a week	N=2689	90%	twice a month	
	Males	N=2155	93%	once a week	N=2158	86%	twice a month	
11	Females	N=2242	96%	once a week	N=2245	92%	once a week	
	Males	N=1184	94%	once a week+	N=1634	88%	once a week	
12	Females	N=1237	95%	once a week	N=1675	93%	once a week	

^{*} In 19 (of 213) school-grade cohorts (only 3 since 2005), tobacco use was normative among males. These 19 school-grade cohorts (representing 6% of students) were removed from the analysis of students' perceptions of male school- grade cohort norms. In 11 (of 215) school-grade cohorts (only 1 since 2005), tobacco use was normative among females. These 11 school- grade cohorts (representing 2% of students) were removed from the analysis of students' perceptions of female school-grade cohorts norms .

Table 8. Misperception of tobacco use norm for same-grade students by race/ethnic

		norm of nonuse among	Median level of
Race	N of students	same grade	misperceived use
White	6077	83%	twice a month
Black	378	81%	once a week
Hispanic / Latino	787	78%	twice a month
Asian	508	77%	once a month
American Indian/Alaskan Native	163	74%	once a week
Other	590	68%	twice a month

6. Multilevel Logistic Regression Models

Table 9. Personally Believing Occasional or Regular Tobacco Use is Okay (vs. Never Okay) is Associated with Perceived and Actual Tobacco Use Attitudinal Norms Among Same-Grade Students

	_	Ma	les	Females	
	_	OR	95% CI	OR	95% CI
Perceived Attitudinal Norm	Perceived that same-grade students think that occasional or regular tobacco use is okay (vs. never a good thing)	4.3***	(3.8, 4.8)	3.9***	(3.3, 4.5)
Actual Attitudinal Norm	Occasional or regular tobacco use is thought to be okay by 26% to 50% of students in same-grade (vs. 0% to 25% of students in same-grade think it is ok)	1.6***	(1.4, 1.8)	1.6***	(1.4, 1.8)

Notes: Multilevel logistic regression model accounted for the clustering of students within schools and adjusted for individual characteristics including age, race/ethnicity, club participation, and having a job, as well as school characteristics including size of population, non-White percentage of the population, level of participation in subsidized lunch program, year of survey, rural location, and state.
***p<.001

Table 10. Using Tobacco (vs. Never Using Tobacco) is Associated with Perceived Tobacco Use Norm and Actual Tobacco Use Prevalence Among Same-Grade Students After Adjusting for Personal Attitude about Tobacco Use

			Ma	les		Females			
		Мо	del 1	Model 2		Model 1		Мо	del 2
		OR	95% CI						
Perceived Behavioral Norm	Perceived occasional tobacco use (vs. perceived no tobacco use)	3.0***	(2.4, 3.7)	2.7***	(2.1, 3.4)	2.2***	(1.7, 2.9)	2.4***	(1.7, 3.3)
for Same-Grade Students	Perceived regular tobacco use (vs. perceived no tobacco use)	5.1***	(4.1, 6.3)	3.8***	(3.0, 4.9)	4.1***	(3.1, 5.4)	3.2***	(2.4, 4.4)
Actual Prevalence of Behavior among Same-Grade Students	Moderate prevalence (26% to 50%) (vs. low prevalence (0% to 25%)) of tobacco use	1.6***	(1.4, 1.9)	1.5***	(1.3, 1.8)	1.6***	(1.5, 1.9)	1.6***	(1.3, 1.9)
Personal Attitude about Behavior	Personally believing that occasional or regular tobacco use is okay			17.6***	(15.6,19.8)			18.4***	(16.2, 20.9)
	Age 12-13 years (vs. age 10-11 years)	2.2**	(1.4, 3.6)	2.7**	(1.4, 5.3)	2.4**	(1.4, 4.1)	2.1*	(1.1, 4.1)
	Age 14-15 years (vs. age 10-11 years)	3.9***	(2.4, 6.4)	3.9***	(2.0, 7.7)	5.0***	(3.0, 8.5)	3.6***	(1.8, 7.0)
	Age 16-17 years (vs. age 10-11 years)	5.4***	(3.2, 9.0)	5.0***	(2.5, 10.1)	5.9***	(3.5, 10.2)	4.3 ***	(2.1, 8.5)
	Age 18+ years (vs. age 10-11 years)	7.5 ***	(4.4, 12.9)	7.1***	(7.1, 14.8)	5.9***	(3.3, 10.6)	5.0***	(2.4, 10.4)
Demographic	Black vs. (White)	1.1	(0.7, 1.6)	1.0	(0.6, 1.6)	0.7	(0.4, 1.2)	0.7	(0.3, 1.3)
Characteristics	Hispanic/Latino vs. (White)	1.2	(0.9, 1.7)	1.7**	(1.2, 2.4)	1.4*	(1.0, 1.9)	1.6*	(1.1, 2.3)
	Asian vs. (White)	0.5*	(0.3, 0.9)	0.6	(0.4, 1.1)	0.6*	(0.3, 0.9)	0.7	(0.4, 1.3)
	OtherR vs. (White)	1.1	(0.8, 1.5)	1.2	(0.8, 1.9)	0.7	(0.5, 1.1)	0.8	(0.5, 1.3)
	Not in a Club vs. (In Club)	1.5 ***	(1.3, 1.7)	1.3 ***	(1.1, 1.6)	1.8***	(1.6, 2.1)	1.8***	(1.5, 2.0)
	Has a Job vs. No Job	1.6***	(1.5, 1.8)	1.4***	(1.3, 1.7)	1.6***	(1.4, 1.8)	1.4***	(1.2, 1.6)

Notes: Multilevel logistic regression model accounted for the clustering of students within school and adjusted for school characteristics including size of population, non-White percentage of the population, level of participation in subsidized lunch program, year of survey, rural location, and state. *p < .05; **p < .01; ***p < .001

Table 11. Using Tobacco (vs. Never Using Tobacco) is Associated with Perceived Tobacco Use Norm and Actual Tobacco Use Prevalence Among Same-Grade-Same-Gender Students and Same-Grade-Opposite-Gender Students, Separately, after Adjusting for Personal Attitude about Tobacco Use

	_	Males				Females			
		Model 3		Model 4		Model 3		Model 4	
		OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Perceived Behavioral Norm for Same-Grade Students	Same-Gender occasionally uses tobacco (vs. never use tobacco)	3.6***	(2.8, 4.8)			2.8***	(2.1, 3.6)		
	Same-Gender regularly uses tobacco (vs. never uses tobacco)	5.8***	(4.3, 7.6)			3.7***	(2.8, 4.8)		
	Opposite-Gender occasionally uses tobacco (vs. never use tobacco)			1.7***	(1.5, 2.0)			2.5***	(1.8, 3.5)
	Opposite-Gender regularly uses tobacco (vs. never uses tobacco)			2.3***	(1.9, 2.7)			3.8***	(2.7, 5.3)
Actual Prevalence of Behavior among Same-Grade Students	Moderate prevalence (26% to 50%) (vs. low prevalence (0% to 25%)) of tobacco use among same-gender	1.6***	(1.3, 1.9)			1.8***	(1.5, 2.2)		
	Moderate prevalence (26% to 50%) (vs. low prevalence (0% to 25%)) of tobacco use among opposite-gender			1.3***	(1.1, 1.6)		-	1.3*	(1.0, 1.5)
Personal Attitude about Behavior	Personally believing that occasional or regular tobacco use is okay	17.5***	(15.5, 19.7)	18.2***	(16.2, 20.5)	18.2***	(16.1, 20.79)	18.9***	(16.6, 21.5)

Notes: Multilevel logistic regression model accounted for the clustering of students within schools and adjusted for individual characteristics including age, race/ethnicity, club participation, and having a job, as well as school characteristics including size of population, non-White percentage of the population, level of participation in subsidized lunch program, year of survey, rural location, and state.

* p<.05; ***p<.001