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Research Article

Parents' social norms and children's exposure to three behavioral risk factors for chronic disease

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Abstract: Social norms predict health behaviors of adults and adolescents. We aimed to determine if parents' beliefs about social norms were associated with children's exposure to three behavioral risk factors. We asked 648 parents of children ages 0-18 years old attending two pediatric practices about their children's exposure to smoking at home. Parents of 341 parents with children ≥ 2 years old were also asked about insufficient dental care, and 435 with children aged ≥ 12 months about their children's sugar-sweetened beverage (SSB) consumption. Children were categorized as "at risk" or "not at risk" for each factor. The primary outcome was the parent-reported estimate of neighborhood prevalence of those same risk factors. Of eligible participants, 8% reported smoking at home, 23% that their child hadn't seen a dentist for 6 months, and 35% that their child drank SSBs once a day or more. In multivariate analyses, parents with children in the "at risk" group estimated that the prevalence of each risk factor was higher in their neighborhood, than did participants with children in the "not at risk" group: difference of 12.2% [95% CI, 5.8%-18.6%] for tobacco-smoke exposure, 18.6% [95% CI, 10.7%-26.5%] for lack of regular dental visits and 12.1% [95% CI, 5.1%-19.0%] for SSB consumption (P<0.001 for all comparisons). Parents of children exposed to three behavioral risk factors reported higher perceived prevalence of each risk factor compared to parents of children not at risk. Addressing parents' social norms beliefs could help promote healthier behaviors of children.

Keywords: Descriptive norms, counseling, behavioral risk factors, children, health

Supplements: Preregistration

Chronic diseases are increasing in prevalence across the world, accounting for 60% of deaths (Tunstall-Pedoe, 2006). They are also responsible for the majority of healthcare budget expenditures (Centers for Disease Control and Prevention, 2014). Many chronic diseases are strongly influenced by behaviours of individuals, and several of these behaviours can be prevented or modified during childhood (Halfon and Hochstein, 2002; Tunstall-Pedoe, 2006; Van Cleave J, Gortmaker SL, & Perrin JM, 2010), including tobacco use and exposure, inadequate dental care, and poor nutrition (Office of Disease Prevention and Heatlh Promotion, 2014). In the United States, national surveys report that 17% of children live with a smoker in the house (Centers for Disease Control and Prevention, 2010), 55% do not have regular contact with a dental health provider (Edelstein and Chinn, 2009; Griffin et al., 2014), and 60-70% consume sugar-sweetened beverages (SSBs) daily (Ogden, Kit, Carroll, & Park, 2012).

Tobacco-smoke exposure is a main driver of several adverse health outcomes in paediatrics including sudden infant death syndrome, asthma,

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dental caries, and upper and lower respiratory tract infections (U.S. Department of Health and Human Services., 2014). Early childhood dental caries is the most prevalent chronic disease of childhood and a major cause of morbidity and out-of-pocket costs for families (Casamassimo, Thikkurissy, Edelstein, & Maiorini, 2009; Edelstein and Chinn, 2009; Scully, 2000). Regular contact with a dental provider has been shown to reduce unscheduled appointments and hospitalizations for dental issues (Sen et al., 2013). Finally, excessive consumption of SSBs is one of the main drivers of the epidemic of paediatric obesity and contributes to poor dental health (DeBoer, Scharf, & Demmer, 2013; Evans et al., 2013; Malik, Pan, Willett, & Hu, 2013).

Social norms have been shown to influence health-related behaviours and can be divided in two categories: injunctive norms and descriptive norms. Injunctive norms represent our belief of what others think we should do and are present in many behaviour change models, including the theory of planned behaviour (Montano and Kasprzyk, 2015). Conversely, descriptive norms are individuals' perceptions of the behaviours of others (Wiium, Torsheim, & Wold, 2006). Descriptive norms, the subject of this article and hereafter referred to simply as "social norms", predict many behaviours, including physical activity, fruit and vegetable consumption, screen time, and smoking in both adults (Smith-McLallen and Fishbein, 2008; Wiium, et al., 2006) and adolescents (Lehto et al., 2016; Pedersen, Gronhoj, & Thogersen, 2015; Stok, de Ridder, de Vet, & de Wit, 2014). Because social norms are based on perceptions as well as incomplete information, they can sometimes be erroneous and normalize harmful behaviours (Lally, Bartle, & Wardle, 2011; Lally et al., 2012). For example, teenagers and young adults tend to overestimate the alcohol consumption of their peers and underestimate others' consumption of fruit and vegetables (Foxcroft, Moreira, Almeida Santimano, & Smith, 2015; Lavinghouze et al., 2015; Stok, et al., 2014). Importantly, interventions based on the use of social norms have proven successful in a range of behaviours, including alcohol use and healthy food consumption (Sharps and Robinson, 2016; Steers et al., 2016; Stok, et al., 2014; Thorndike, Riis, & Levy, 2016).

To date, few studies have investigated parental social norms as a potential target for interventions to improve health outcomes in children. Some early studies evaluating social norms for snacking, booster seat usage, and tooth brushing have been promising (Jeffrey, Whelan, Pirouz, & Snowdon, 2016; Lally, et al., 2012; Trubey, Moore, & Chestnutt, 2015). In this study, we aimed to determine parents' perceived prevalence ("social norms") of three health-related behaviours (tobacco-smoke exposure, dental care visits, and consumption of SSBs) among other families in their neighbourhoods. We tested if the social norms of parents who reported a risk factor (e.g., a smoker in the house) were different than parents who did not report the risk factor (e.g., no smoker in the house). Finally, we sought to determine whether parents who reported a risk factor were more likely to report intention to change the behaviour (e.g., quit smoking) if they had a low perceived prevalence of the risk factor, compared to those who had a high perceived prevalence of the risk factor.

Materials and Methods

Study design

This study used baseline cross-sectional data from a study on the use of pre-appointment screening for risk factors in the paediatric office waiting room (Drouin and Winickoff, 2018). Relevant components of the study are summarized below.

Population

We recruited parents or legal guardians of children aged 0-18 years old who attended one of two academic general paediatric practices. From October 2016 to January 2017, during clinic opening hours Monday through Friday, two research staff approached all eligible parents after the clinical encounter. To be eligible, parents needed to be at the clinic for a scheduled appointment with their child's regular primary care physician and speak English. Participants were excluded if they were not the parent or the legal guardian of a child 0-18 years old. Parents who came to the clinic more than once during the study period were only eligible to participate on one occasion.

Procedure

Research staff approached parents in the waiting room after the medical appointment was completed. After describing the study, screening for eligibility, and obtaining written informed consent, research staff conducted a 10-minute

verbal survey, with data entered by the research staff on an electronic tablet. Participants received a $5 gift card for their participation. Study data were collected and managed using REDCap electronic data capture tools. (Harris et al., 2009). Data were de-identified and stored on a password-protected server hosted at the Massachusetts General Hospital. The authors were the only people with access to the data. REDCap (Research Electronic Data Capture) is a secure, web-based application designed to support data capture for research studies.

Exposure

A child was considered to be "at risk" for smoking if the parent reported that there was a smoker in the house. National guidelines recommend that children visit the dentist by 12 months or after first tooth eruption (American Academy of Pediatrics, 2013). Consequently, a child ≥2 years was considered "at risk" for undiagnosed dental caries if he or she had not seen a dentist in the previous 6 months. Finally, guidelines recommend limiting beverages high in sugar. Therefore, if the child was 12 months or older, he or she was considered "at risk" for obesity and related chronic diseases if he or she consumed SSB once a day or more (American Academy of Pediatrics, 2013). SSB consumption was obtained by asking participants three separate questions about their child's consumption of "regular soda or pop that contains sugar", "fruit juice", and "sweetened drinks such as Kool-Aid, lemonade, sweet tea, Hi-C, cranberry juice cocktail, sport drinks, etc" (Taveras et al., 2015).

Outcomes

The primary outcome was the parent-reported social norm (estimated neighbourhood prevalence) for each risk factor. After being asked about the presence of risk factors, parents were asked: "Among children the same age as your child and living in your neighbourhood, how many do you think [live in a house with smoker/go to a dentist twice a year/drink SSB at least once a day]?". For each social norm question, parents were given the following response choices "No children," "1 out of 10 children," "2 out of 10 children," and up until "all children."

A secondary outcome was intention to change the risky behaviour in the next 30 days. For example, parents of children who drank SSBs once a day or more were asked to respond "yes" or "no" to the statement: "At some point in the next thirty days, I intend to decrease the quantity of juice or soda/pop my child drinks" (Billich et al., 2018; Jung, 2016). For children exposed to tobacco smoke, this question was only asked of those participants who were the smoker. Other covariates measured included ages of the parent and the child, race/ethnicity, education, insurance status, and difficulty in making ends meet (Council On Community, 2016). All outcomes were obtained by parental self-report.

Analysis plan/Statistical methods

We performed t-tests to compare social norms between the parents in the "at risk" group and those in the "not at risk" group for each risk factor. We used multivariate linear regression models to adjust for socio-demographics characteristics and report the difference in perceived prevalence between the two groups, along with the 95% confidence interval. For all analyses, we used the standard threshold of $p<0.05$ for statistical significance. To evaluate the impact of social norms on behaviour change intention among participants in the "at risk" group, we used multivariate logistic regression models using behaviour change intention as the outcome, and social norm as the predictor of interest for each risk factor. We also adjusted for socio-demographic variables in those models. All statistical analyses were performed using SAS 9.4 (Cary, NC). This research study was approved by the Partners Institutional Review Board on June 5, 2016 and the main study from which this data was generated is registered at clinicaltrials.gov (NCT02912000).

Results

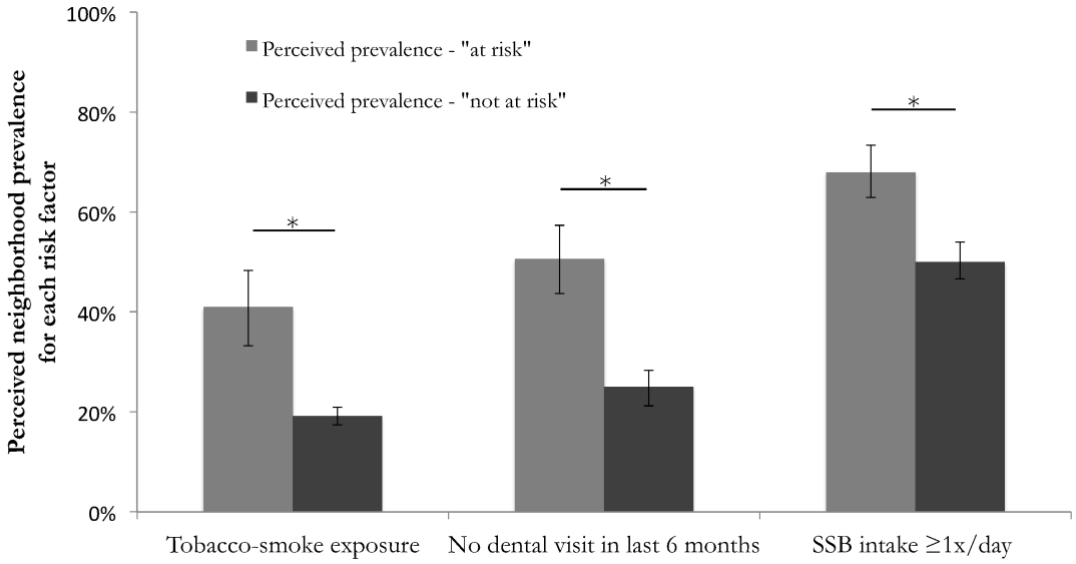
A total of 1174 parents were approached to participate in the study; 526 (44.8%) did not meet inclusion criteria, and 648 (55.2%) participants were included in this study. Among those who did not meet inclusion criteria, 288 (54.8%) were excluded because they were not seeing their regular physician, 141 (26.8%) had previously been approached for the same study at an earlier time, and 52 (9.9%) were excluded due to their inability to answer the survey in English. Demographic characteristics of the sample can be found in Table 1. Mean age (SD) of the parents and children were 37.6 (7.8) and 4.5

Table 1
Children, and parents' characteristics in the sample, and among those "at risk" for each risk factor[a]

	Smoker in the house	Child ≥2 years who has not seen dentist in 6 mo[b]	Child ≥ 12 months who drinks ≥ 1 SSB a day[c]	No risk factor
	n=53/648	n=77/341	n=151/435	n=425
Child's characteristics				
Child age, mean (SD), y	6.1 (5.3)	5.9 (4.9)	7.8 (4.9)	3.2 (4.8)
% ≥ 12 months	41 (77)	77 (100)	151 (100)	224 (53)
Parent's characteristics				
Parent age, mean (SD), y	38.0 (11.3)	36.0 (6.4)	39.4 (8.9)	37.0 (7.0)
Female	47 (89)	64 (83)	123 (81)	326 (77)
College graduate	11 (21)	48 (64)	63 (43)	330 (81)
Self-reported "race"/ethnicity				
Black/African American	10 (19)	9 (13)	30 (23)	44 (11)
Hispanic/Latino	4 (8)	6 (9)	14 (11)	34 (9)
White	33 (62)	34 (49)	63 (47)	250 (64)
Other	6 (11)	21 (30)	26 (20)	63 (16)
Insurance				
Medicaid	35 (48)	15 (20)	51 (35)	51 (13)
Private	26 (50)	57 (75)	87 (60)	344 (85)
Other	1 (2)	4 (5)	7 (5)	11 (3)
Have difficulty making ends meet	19 (37)	14 (19)	35 (24)	26 (6)
Risk factors				
Smoker in the house	53 (100)	8 (10)	26 (17)	0
Participant is the smoker	31 (58)	5 (6)	16 (10)	0
Child has not seen a dentist in last 6 months[c]	8 (22)	77 (100)	30 (22)	0
Child drinking SSBs ≥1x/day (incl. juice)[c]	26 (63)	47 (39)	151 (100)	0
Intent to change risk factor in next 30 days[d]				
Intention to change	14 (47)	50 (67)	76 (55)	NA
No intention to change	16 (53)	23 (33)	62 (45)	NA

a) Unless indicated, data are expressed as number (percentage) of patients. Percentages have been rounded and may not sum to 100.
b) Among 341 children ≥2 years
c) Among 435 children ≥ 12 months
d) For smoking, this question was only asked to participants who were smoker themselves
NA: Not applicable

Figure 1
Social norms (perceived prevalence) for each risk factor,
for participants in the "at risk" group vs. participants in the "not at risk" group



Notes: * p-value < 0.05. SSB: sugar-sweetened beverages. Error bars represent the 95% confidence interval.

(5.2) years respectively, and 341 children (52.7%) were age two or older. At baseline, 53 parents (8.2%) reported a smoker in the house. Among parents with a child ≥2 years (n=341), 77 (23.0%) reported that their child had not seen a dentist in the previous 6 months, and among parents of children 12 months or older (n=435), 151 (34.7%) reported that their child consumed SSBs once a day or more (Table 1).

Participants whose children were exposed to tobacco ("at risk" group) reported higher social norms (perceived neighbourhood prevalence) of tobacco-smoke exposure compared to participants whose children were not exposed to tobacco smoke at home ("not at risk" group) (40.8% vs. 19.2%, P<0.001) (Figure 1). Parents of children in the "at risk" group, compared to parents in the "not at risk" group reported higher prevalence of not seeing a dentist in the last 6 months (50.5% vs. 24.7%, P<0.001) and consuming SSB (74.7% vs. 54.4%, P<0.001) (Figure 1).

In multivariate models, after adjusting for socio-demographic characteristics, parents with children at risk for tobacco believed that the neighbourhood prevalence of tobacco smoke exposure was 12.2% [95% C.I. 5.8%; 18.6%] higher than parents of children who were not at risk for tobacco (Table 2). Similarly, parents of children who had not seen a dentist in the previous six months believed the prevalence of the risk factor was 18.6% higher [95% C.I: 10.7%; 26.5%] than parents of children who were not at risk. And parents of children with frequent SSB consumption believed the prevalence of the risk factor was 12.1% [95%C.I.: 5.1%; 19.0%] higher than parents whose children did not consume SSBs regularly (P<0.001 for all comparisons) (Table 2).

We conducted an exploratory analysis to determine whether the social norms among parents in the "at risk" group were associated with their intention to change the risk factor. Among parents in the "at risk" group, between 47% and 67% reported wanting to change the behavioural risk factor in the next 30 days (Table 1). There were no significant differences in social norms between parents who reported intention to change a behaviour when compared to those who reported

Table 2

Difference in social norms (perceived prevalence) for behavioral risk factors between parents with children "at risk" compared to parents with children "not at risk."

	Tobacco-smoke exposure			Dental Health			SSB consumption		
	Difference (95% C.I.)			Difference (95% C.I.)			Difference (95% C.I.)		
Model 1	21.5%	(15.1%;	27.9%)	25.8%	(18.2%;	33.3%)	17.8%	(11.5%;	24.1%)
Model 2	20.2%	(14.1%;	26.3%)	17.9%	(10.1%;	25.7%)	14.0%	(7.6%;	20.3%)
Model 3	12.2%	(5.8%;	18.6%)	18.6%	(10.7%;	26.5%)	12.1%	(5.1%;	19.0%)

Model 1: Unadjusted,

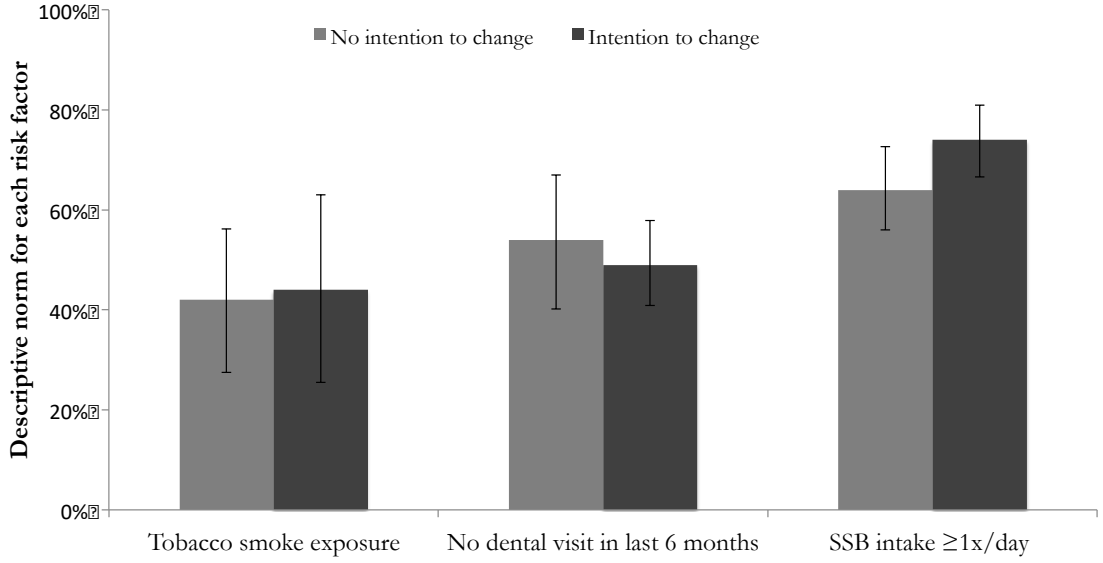
Model 2: Adjusted for age of the child and parent.

Model 3: Model 2 + Adjusted for race/ethnicity, parental education, insurance type, and difficulty in making ends meet

SSB: Sugar-sweetened beverages.

Figure 2

Social norms (perceived prevalence) for risk factors of participants reporting intention to change compared to those with no intention to change.



Notes: SSB: sugar-sweetened beverages. Error bars represent the 95% confidence interval.

no intention to change: 44% vs. 42% (p=0.83) for tobacco smoke exposure, 49% vs. 54% (p=0.58) for dental visit, and 74% vs. 64% (p=0.09) for SSB consumption (Figure 2). The differences remained non-significant after adjusting for socio-demographic characteristics.

Discussion and Conclusion

This study found that parents with children exposed to three important childhood behavioural risk factors believed the risk factor was more prevalent in their community compared to parents with children who were not exposed to the risk

factor. This finding was consistent for all behaviours examined: tobacco smoke exposure, dental visits, and SSB consumption. These results suggest that considering parents' social norms about risky health behaviours may be an important strategy to help paediatric clinicians and healthcare administrators change these behaviours of children and their families.

It is possible that the parents in the "at risk" groups truly had higher neighbourhood prevalence of each risk factor than the parents in the "not at risk" groups. Households with a smoker were more likely to report Medicaid insurance and "having difficulty making ends meet." Therefore, these families may have lived in low-income communities that had higher rates of smoking. Previous research has demonstrated that smoking does occur within social networks (Christakis and Fowler, 2007). In this study, we were not able to determine whether true differences in the prevalence of the risk factors or inaccurate parental perceptions explained our findings. Knowing that all three behavioural risk factors may cluster in low socio-economic populations, we adjusted for parent demographics in our analyses. Even after accounting for demographics, the differences remained statistically significant, suggesting that only part of the effect observed was due to the clustering of risk factors. The tobacco exposure social norms findings in our study are similar to a previously published report showing that college smokers tend to overestimate the prevalence of smoking among their peers (Terry and Terry, 2012).

Our results suggest that an intervention aimed at correcting potentially erroneous social norms beliefs of parents might be an effective strategy to create positive behaviour change among children exposed to modifiable risk behaviours. In a study to promote child booster seat usage, a brief intervention using descriptive norms to inform parents that a majority of other parents engage in the desirable behaviour (booster seat usage) was effective (Jeffrey, et al., 2016). This finding suggests, that these types of interventions could be integrated into either clinical encounters or public health messaging.

Study limitations

This study has limitations. First, behavioural risk factors in this study were collected by self-report in the context of a visit to the child's physician. Therefore, parents may have altered their responses to be viewed favourably by the research staff. The lower prevalence of each risk factor in our sample, when compared to national estimates, suggest that this may have occurred. However, any misclassification should have biased our results toward the null hypothesis, given that parents of children at risk (reporting higher perceived prevalence) would have been wrongly categorized in the "not at risk" group and would have inflated the mean perceived prevalence for that group. Second, we cannot know which population a parent was thinking about when describing the social norms. For example, some parents might have considered families living on the same street whereas other parents might have considered the entire town or city. We purposefully chose to ask about "children the same age as your child and living in your neighbourhood" because previous studies have shown that social norms are more accurate and more personally relevant when they refer to people with whom one can identify (as opposed to the general population) (Kahneman, 2011; Larimer et al., 2011). Unfortunately, we did not have access to "true" prevalence of those risk factors with the level of granularity required to make proper adjustment.

Conclusion

Parents of children exposed to three behavioural risk factors were more likely to believe that other children were exposed to the same risk factors than parents with children who were not exposed to risk factors. Correcting potentially false social normative beliefs could be an effective strategy to promote behaviour change among families with children at risk for unhealthy behaviours.

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References

American Academy of Pediatrics. (2013). Bright Futures: Guidelines for Health Supervision of Infants, Children, and Adolescents. Elk Grove Village IL,

Billich, N., Blake, M. R., Backholer, K., Cobcroft, M., Li, V., & Peeters, A. (2018). The effect of sugar-sweetened beverage front-of-pack labels on drink selection, health knowledge and awareness: An online randomised controlled trial. *Appetite, 128*, 233-241.

Casamassimo, P. S., Thikkurissy, S., Edelstein, B. L., & Maiorini, E. (2009). Beyond the dmft: the human and economic cost of early childhood caries. *Journal of the American Dental Association, 140(*6), 650-657. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/19491160

Centers for Disease Control and Prevention. (2010). Vital signs: nonsmokers' exposure to secondhand smoke --- United States, 1999-2008. *Morbidity and Mortality Weekly Report, 59*(35), 1141-1146. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/20829748

Centers for Disease Control and Prevention. (2014). Chronic Diseases - The Power to Prevent, The Call to Control: At A Glance 2009. Retrieved Date Accessed, 2014 from http://www.cdc.gov/chronicdisease/resources/publications/aag/chronic.htm.

Christakis, N. A., & Fowler, J. H. (2007). The spread of obesity in a large social network over 32 years. *The New England Journal of Medicine, 357*(4), 370-379. doi:10.1056/NEJMsa066082 Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/17652652

Council on Community, P. (2016). Poverty and Child Health in the United States. *Pediatrics, 137*(4) doi:10.1542/peds.2016-0339 Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/26962238

DeBoer, M. D., Scharf, R. J., & Demmer, R. T. (2013). Sugar-sweetened beverages and weight gain in 2- to 5-year-old children. *Pediatrics, 132*(3), 413-420. doi:10.1542/peds.2013-0570 Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/23918897

Drouin, O., & Winickoff, J. P. (2018). Screening for Behavioral Risk Factors Is Not Enough to Improve Preventive Services Delivery. *Academic Pediatrics, 18*(4), 460-467. doi:10.1016/j.acap.2018.01.008 Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/29367020

Edelstein, B. L., & Chinn, C. H. (2009). Update on disparities in oral health and access to dental care for America's children. *Academic Pediatrics, 9*(6), 415-419. doi:10.1016/j.acap.2009.09.010 Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/19945076

Evans, E. W., Hayes, C., Palmer, C. A., Bermudez, O. I., Cohen, S. A., & Must, A. (2013). Dietary intake and severe early childhood caries in low-income, young children. *Journal of the Academy of Nutrition and Dietetics, 113*(8), 1057-1061. doi:10.1016/j.jand.2013.03.014 Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/23706351

Foxcroft, D. R., Moreira, M. T., Almeida Santimano, N. M., & Smith, L. A. (2015). Social norms information for alcohol misuse in university and college students. *Cochrane Database of Systematic Reviews, 1*, p CD006748. doi:10.1002/14651858.CD006748.pub3 Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/25622306

Griffin, S. O., Barker, L. K., Wei, L., Li, C. H., Albuquerque, M. S., Gooch, B. F., . . . Prevention. (2014). Use of dental care and effective preventive services in preventing tooth decay among U.S. Children and adolescents--Medical Expenditure Panel Survey, United States, 2003-2009 and National Health and Nutrition Examination Survey, United States, 2005-2010. *Morbidity and Mortality Weekly Report Supplement, 63*(2), 54-60. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/25208259

Halfon, N., & Hochstein, M. (2002). Life course health development: an integrated framework for developing health, policy, and research. *The Milbank Quarterly, 80*(3), 433-479, iii. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/12233246

Harris, P. A., Taylor, R., Thielke, R., Payne, J., Gonzalez, N., & Conde, J. G. (2009). Research electronic data capture (REDCap)--a metadata-driven methodology and workflow process for providing translational research informatics support. *Journal of Biomedical Informatics, 42*(2), 377-381. doi:10.1016/j.jbi.2008.08.010 Retrieved from

https://www.ncbi.nlm.nih.gov/pubmed/18929686

Jeffrey, J., Whelan, J., Pirouz, D. M., & Snowdon, A. W. (2016). Boosting safety behaviour: Descriptive norms encourage child booster seat usage amongst low involvement parents. *Accident Analysis & Prevention, 92*, 184-188. doi:10.1016/j.aap.2016.03.006 Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/27085145

Jung, M. (2016). Exploring socio-contextual factors associated with male smoker's intention to quit smoking. *BMC Public Health, 16*(1), 398.

Kahneman, D. (2011). *Thinking, fast and slow*. Macmillan.

Lally, P., Bartle, N., & Wardle, J. (2011). Social norms and diet in adolescents. *Appetite, 57*(3), 623-627. doi:10.1016/j.appet.2011.07.015 Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/21843568

Lally, P., Cooke, L., McGowan, L., Croker, H., Bartle, N., & Wardle, J. (2012). Parents' misperceptions of social norms for pre-school children's snacking behaviour. *Public Health Nutrition, 15*(9), 1678-1682. doi:10.1017/S1368980012000328 Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/22414799

Larimer, M. E., Neighbors, C., LaBrie, J. W., Atkins, D. C., Lewis, M. A., Lee, C. M., . . . Walter, T. (2011). Descriptive drinking norms: For whom does reference group matter? *Journal of Studies on Alcohol and Drugs, 72*(5), 833-843. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/21906510

Lavinghouze, S. R., Malarcher, A., Jama, A., Neff, L., Debrot, K., & Whalen, L. (2015). Trends in Quit Attempts Among Adult Cigarette Smokers - United States, 2001-2013. *Morbidity and Mortality Weekly Report, 64*(40), 1129-1135. doi:10.15585/mmwr.mm6440a1 Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/26468619

Lehto, E., Ray, C., Haukkala, A., Yngve, A., Thorsdottir, I., & Roos, E. (2016). Do descriptive norms related to parents and friends predict fruit and vegetable intake similarly among 11-year-old girls and boys? *British Journal of Nutrition, 115*(1), 168-175. doi:10.1017/S0007114515003992 Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/26450715

Malik, V. S., Pan, A., Willett, W. C., & Hu, F. B. (2013). Sugar-sweetened beverages and weight gain in children and adults: a systematic review and meta-analysis. *The American Journal of Clinical Nutrition, 98*(4), 1084-1102. doi:10.3945/ajcn.113.058362 Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/23966427

Montano, D. E., & Kasprzyk, D. (2015). Theory of reasoned action, theory of planned behavior, and the integrated behavioral model. *Health behavior: Theory, research and practice*, 95-124.

Office of Disease Prevention and Heatlh Promotion. (2014). Healthy People 2020 Topics and Objectives. Retrieved Date Accessed, 2015 from http://www.healthypeople.gov/2020/topics-objectives.

Ogden, C., Kit, B., Carroll, M., & Park, S. (2012). Consumption of sugar drinks in the United States, 2005–2008. NCHS data brief, no 71. Hyattsville, MD: National Center for Health Statistics. 2011. *US Department of Agriculture, Agricultural Research Service, National Agricultural Library. National nutrient database for standard reference, release*, 25

Pedersen, S., Gronhoj, A., & Thogersen, J. (2015). Following family or friends. Social norms in adolescent healthy eating. *Appetite, 86*, 54-60. doi:10.1016/j.appet.2014.07.030 Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/25088047

Scully, C. (2000). Oral health in America: a report of the Surgeon General.

Sen, B., Blackburn, J., Morrisey, M. A., Kilgore, M. L., Becker, D. J., Caldwell, C., & Menachemi, N. (2013). Effectiveness of preventive dental visits in reducing nonpreventive dental visits and expenditures. *Pediatrics, 131*(6), 1107-1113. doi:10.1542/peds.2012-2586 Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/23713098

Sharps, M., & Robinson, E. (2016). Encouraging children to eat more fruit and vegetables: Health vs. descriptive social norm-based messages. *Appetite, 100*, 18-25. doi:10.1016/j.appet.2016.01.031 Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/26820776

Smith-McLallen, A., & Fishbein, M. (2008). Predictors of intentions to perform six cancer-related behaviours: roles for injunctive and descriptive norms. *Psychology, Health & Medicine, 13*(4), 389-401. doi:10.1080/13548500701842933 Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/18825578

Steers, M. L., Coffman, A. D., Wickham, R. E., Bryan, J. L., Caraway, L., & Neighbors, C. (2016). Evaluation of Alcohol-Related Personalized Normative Feedback With and Without an Injunctive Message. *Journal of Studies on Alcohol and Drugs, 77*(2), 337-342. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/26997192

Stok, F. M., de Ridder, D. T., de Vet, E., & de Wit, J. B. (2014). Don't tell me what I should do, but what others do: the influence of descriptive and injunctive peer norms on fruit consumption in adolescents. *British Journal of Health Psychology, 19*(1), 52-64. doi:10.1111/bjhp.12030 Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/23406475

Taveras, E. M., Marshall, R., Sharifi, M., Avalon, E., Fiechtner, L., Horan, C., . . . Slater, D. (2015). Connect for Health: Design of a clinical-community childhood obesity intervention testing best practices of positive outliers. *Contemporary Clinical Trials, 45*(Pt B), 287-295. doi:10.1016/j.cct.2015.09.022 Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/26427562

Terry, C. P., & Terry, D. L. (2012). Exaggeration of perceived smoking norms among college students: Does smoking status matter? *Addiction Research & Theory, 20*(4), 291-299.

Thorndike, A. N., Riis, J., & Levy, D. E. (2016). Social norms and financial incentives to promote employees' healthy food choices: A randomized controlled trial. *Preventive Medicine, 86*, 12-18. doi:10.1016/j.ypmed.2016.01.017 Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/26827617

Trubey, R. J., Moore, S. C., & Chestnutt, I. G. (2015). The association between parents' perceived social norms for toothbrushing and the frequency with which they report brushing their child's teeth. Community *Dental Health, 32*(2), 98-103. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/26263603

Tunstall-Pedoe, H. (2006). Preventing Chronic Diseases. A Vital Investment: WHO Global Report. Geneva: World Health Organization, 2005. pp 200. CHF 30.00. ISBN 92 4 1563001. Also published on http://www. who. int/chp/chronic_disease_report/en: Oxford University Press.

U.S. Department of Health and Human Services. (2014). *The Health Consequences of Smoking—50 Years of Progress: A Report of the Surgeon General*. Atlanta

Van Cleave J, Gortmaker SL, & Perrin JM. (2010). Dynamics of obesity and chronic health conditions among children and youth. *The Journal of the American Medical Association, 303*(7), 623-630.

Wiium, N., Torsheim, T., & Wold, B. (2006). Normative processes and adolescents' smoking behaviour in Norway: a multilevel analysis. *Social Science & Medicine, 62*(7), 1810-1818. doi:10.1016/j.socscimed.2005.08.029 Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/16165262