



## **The Effects of Second-Hand Smoking Prevention Program Developed Based on Protection on Motivation Theory in School Aged Children**

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### **Dear Editor-in-Chief**

Second-hand smoking refers to the inhaling of cigarette smoke produced by someone else, and not smoke produced from first-hand smoking. It is also called passive smoking based on the fact that the action is not voluntary, but through someone else, and is also referred to as environmental tobacco smoke. In particular, second-hand smoke within houses could cause more fatal damage to children and the elderly owing to closed air circulation (1). Smoking in homes by adults or that from peers can act as a trigger for smoking among children and adolescents (2). Because of these reasons, the implementation of second-hand smoke prevention education for children in pre-adolescent years can be an effective prevention program for protecting non-smokers from smokers (3).

School-aged children engage in behaviors that they consider to be valuable (4). It is very important to help school-aged children develop basic lifestyle habits for activities of daily living according to these developmental characteristics. Also, school-aged children have a strong interest in body integrity and consequently, respond very sensitively to threats to their own bodies. Thus, the second-hand smoke prevention programs based on the Protection Motivation Theory (PMT) could be very effective for school-aged children. PMT is based on the presumption that

exposure to threat triggers protection motivation, which brings about behavioral changes in an effort to protect one's own health (5).

Accordingly, the present study designed second-hand smoke prevention programs based on the PMT, as shown in Table 1. According to the PMT, health educators guide school-aged children to experience fear appeal about being exposed to second-hand smoke. During this process, the educators also guide the learners to perceive the severity of the problems associated with second-hand smoke. As their perception increases, children perceive that their vulnerability is high, which ultimately induces protection motivation to protect one's self. Consequently, children take on verbal and behavioral coping intentions to avoid second-hand smoke, which brings attitude changes. The participants were 57 students from 4 different third grade classes of a primary school located in G region. The two classes that had the numbered face appear first by a coin flip were selected as the experimental group. The experimental group (n=29) received the second-hand smoke prevention program based on PMT (40 minutes, one session per week for 6 sessions between July 17 and September 30, 2017), while the control group (n=28) received the program after the experiment.

The study was approved by the Institutional Review Board of Chonnam National University

(1040198-161107-HR-105-03). Data were collected before and after the intervention using a structured questionnaire. Collected data were processed using SPSS 22.0 (Chicago, IL, USA) and

independent samples *t*-tests were on the differences in the scores of the major variable to identify the interventional effect. Statistical significance was set to  $P < 0.05$ .

**Table 1:** Second-hand smoking prevention program based on protection motivation theory

<i>Session</i>	<i>Themes</i>	<i>Contents</i>	<i>Components of PMT</i>
1	Concept and dangers of second-hand smoke	In-home second-hand smoke cases Concept of second-hand smoke Group discussion about the dangers of second-hand smoke	Fear appeal
2	Problems associated with second-hand smoke	Problems associated with second-hand smoke identifiable around one's self Song about the problems associated with second-hand smoke	Perceived severity
3	Cases of damage from second-hand smoke	Problems associated with second-hand smoke that appear in school-aged children Problems associated with second-hand smoke for pregnant women and the fetus	Perceived vulnerability
4	Coping methods	Situational coping methods for second-hand smoke Age-based coping methods for second-hand smoke	Protection motivation
5	Verbal coping	Create second-hand smoke prevention poster Role playing for verbal coping	Attitude change
6	Behavioral coping	Create second-hand smoke prevention poster Role playing for behavioral coping	Attitude change

After the program, school-aged children in the experimental group showed statistically significant changes in perceived dangers of second-hand smoke ( $t = 4.548, P < 0.001$ ), verbal coping

for second-hand smoke ( $t = 3.995, P < 0.001$ ), and behavioral coping for second-hand smoke ( $t = 3.784, P < 0.001$ ), as compared to the control group (Table 2).

**Table 2:** Comparison of perceived dangers of second-hand smoke and verbal and behavioral coping for second-hand smoke between two groups (N = 57)

<i>Variables</i>		<i>Pre</i>	<i>Post</i>	<i>Difference (Post-Pre)</i>	<i>t</i>	<i>P</i>
		<i>M ± SD</i>	<i>M ± SD</i>	<i>M ± SD</i>		
Perceived dangers of second-hand smoke	Exp.	32.62 ± 15.24	51.21 ± 12.94	18.59 ± 14.20	4.548	<0.001
	Con.	34.36 ± 15.76	31.75 ± 13.67	-2.61 ± 20.54		
Verbal coping for second-hand smoke	Exp.	23.83 ± 4.82	27.41 ± 4.12	3.59 ± 5.42	3.995	<0.001
	Con.	25.93 ± 3.67	23.93 ± 5.41	-2.29 ± 5.70		
Behavioral coping for second-hand smoke	Exp.	20.03 ± 4.58	23.07 ± 2.55	3.03 ± 4.00	3.784	<0.001
	Con.	21.61 ± 2.99	19.96 ± 3.68	-1.64 ± 3.68		

Note: Exp. = experimental group; cont. = control group, M=mean, SD=standard deviation

The second-hand smoke prevention program based on PMT for school-aged children was effective. Accordingly, this programs could be effectively used in future prevention education for school-aged children. Moreover, when school-aged children participating in second-hand smoke prevention programs are exposed to second-hand smoke, they can take more active verbal and behavioral coping measures to avoid second-hand smoke.

### **Conflict of interest**

The authors declare no conflict of interest.

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