

BUKTI KORESPONDING

Judul : The Role Attitude, Subjective Norm, And Perceived Behavior Control (PBC) Of Mothers On Teaching Toothbrushing To Preschool Children-Based On The Theory Of Planned Behavior : A Cross-Sectional Study

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New manuscript received by Editorial Office (FAMILY-00473-2018-01)

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Wed, Jul 11, 2018, 9:58 AM



to me

Dear Taufan Bramantoro,

Thank you for your manuscript: The **role of attitude, subjective norm, and perceived behavioral control (PBC)** of mother on teaching how to toothbrushing the preschool children based on the Theory of Planned **Behavior**.

The following number has been assigned to it: FAMILY-00473-2018-01.

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Thank you for submitting your work to our journal.

Yours sincerely,
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The role of attitude, subjective norm, and perceived behavioral control (PBC) of mother on teaching how to toothbrushing the preschool children based on the Theory of Planned Behavior: A Cross-Sectional Study

Taufan Bramantoro, R. Darmawan Setijanto, Retno Palupi, Atika Hanani

Dear Taufan Bramantoro,

We have carefully evaluated your manuscript, entitled: The role of attitude, subjective norm, and perceived behavioral control (PBC) of mother on teaching how to toothbrushing the preschool children based on the Theory of Planned Behavior: A Cross-Sectional Study, and feel that as it stands we cannot accept it. We might, however, be able to accept it if you could respond adequately to the points that have been raised during the review process (see below).

Please revise your manuscript strictly according to the attached Reviewers' comments. Your manuscript won't be taken into consideration without the revisions made according to the recommendations.

Authors are requested to prepare a revised version of their manuscript and the detailed reply to Reviewers with a list of all made changes as soon as possible. All changes in the revised version should be clearly indicated (by colored background or colored fonts).

Thank you for submitting your work to our journal.

Kindest regards,
prof. Katarzyna Kiliś-Pstrusińska

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Review 1:
Comments and Suggestions for Authors

In the work authors undertake an important and scientifically uneasy subject: The role of attitude, subjective norm, and perceived behavioral control (PBC) of mother on teaching how to toothbrushing the preschool children based on the Theory of Planned Behavior (TPB).

Introduction: The introduction quite clearly introduces the reader into the discussed problem, but some source literature items need to be updated.

Purpose of the thesis: correctly formulated

Material and methods: in this section the Authors should supplement:

- description of the method of drawing the group of mothers for the research (which general population the group of 218 mothers of children in kindergarten age has been drawn from, the drawing method used)
- describe exactly the research tool and present the way of operationalizing the questions in the questionnaire for the applied TPB model with regard to the measurement of the model components namely: intentions, attitudes, standards and sense of control. According to TPB model authors' recommendations, the questions should be built according to the recommendations described in the publications by Ajzen and Fishbein (1980) and Fishbein and Ajzen (2010). Please provide a presentation in the table of the statement of the applied questions, coding of the answers and results of at least the evaluation of measurement reliability by internal consistency analysis for particular subscales: intentions, attitudes, standards and sense of control in the TPB model.
- exact description of statistical methods applied for statistical analysis of research findings

Research findings: presented synthetically, quite legibly

Discussion: too extensive. TBP theory description (verses 180-207) is not a discussion of research findings – this section can be eliminated. It is worth enriching the discussion with references obtained by the Authors of the research findings to the results from the European region.

Practical implications should also be presented from the obtained results in the scope of innovative projects of health insurance programs addressed to mothers of children in the kindergarten age subject to the significant TBP theory elements.

Conclusions – consistent with the research assumptions

References – requires revision in the scope of bibliographic entries

Review 2:

interesting study about behavior.

The data of the sample consider education, incomes, and employment.

- Can you consider other factors such as, number of children, marital status of the mother? (Mother's role seems very strong in the Indonesian society, the father's role seems far less important)
- Studies based on questionnaires have specific biases, they can be discussed.

Further studies about the link of behavior intent and real teeth brushing should be interesting.

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The role of attitude, subjective norm, and perceived behavioral control (PBC) of mother on teaching how to toothbrushing the preschool children based on the Theory of Planned Behavior: A Cross-Sectional Study

R. Darmawan Setijanto, Taufan Bramantoro, Retno Palupi, Atika Hanani

Dear Taufan Bramantoro,

I am pleased to inform you that your manuscript, entitled: The role of attitude, subjective norm, and perceived behavioral control (PBC) of mother on teaching how to toothbrushing the preschool children based on the Theory of Planned Behavior: A Cross-Sectional Study, has been finally accepted for publication in our journal (01/2019).

Thank you for submitting your work to us.

Yours sincerely,
Donata Kurpas
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Title Page

Full title: **The role of attitude, subjective norm, and perceived behavioral control (PBC) of mother on teaching how to toothbrushing the preschool children based on the Theory of Planned Behavior: A Cross-Sectional study**

Running title: Role of attitude, subjective norm, and PBC based on TPB

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Conflict of Interests

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The role of attitude, subjective norm, and perceived behavioral control (PBC) of mother on teaching how to toothbrushing the preschool children based on the *Theory of Planned Behavior*: A Cross-Sectional Study

Summary

Background: Indonesia has reported high prevalence and severity of early childhood caries (ECC) that is 90% at age 3-5 years with higher mean of decay extraction filling-teeth (def-t). Preschool children are one of the most vulnerable groups to dental and oral disease because they generally still not have proper behavior to maintain their oral health. Parental care is an important factor as the basis of the formation of behaviors that support or do not support oral hygiene of children. One well-validated theory commonly used to test attitudes and behaviors of people is Theory of Planned Behavior.

Objective: To describe the mother behavior on teaching how to brushing teeth the preschool children based on Theory of Planned Behavior.

Material and Method: cross-sectional analytic study with sample size 218 mother of kindergarten children in Surabaya. We obtained by giving questionnaire to mothers, consist of 35 questions, which consist of semi open ended and closed ended questions.

Result: Variables of Theory of Planned Behavior which showed the significant effect on intention to act a behavior were attitude and PBC with p-value <0.005. Attitude, subjective norms, and PBC were tested together to measure the influence to intention, which resulted R² 0.37.

Conclusion: attitudes and PBC are the most dominant factors in improving mother's intentions and behavior to teach toothbrushing to their children.

Keywords: dental caries, preschool children, mother, behavior, theory planned behavior.

Background

Dental caries is one of the most common dental health problems in community. Dental caries children is the most complained of dental health problems. The 2013 Basic Health Research (RISKESDAS) report stated that the average prevalence of Indonesian dental and oral problems is 25.9%, where the average caries index is 4.6%. Dental caries is not only occurred in adults, but also in children. The prevalence of caries in preschool children (aged 3-5 years) in Indonesia is reported to be 90.5% in urban areas and 95.9% in rural areas [1].

Early Childhood Caries (ECC) continues to be a worldwide pandemic disease. The prevalence of children aged 3-5 years old varies on each continents and countries. Cambodia and Indonesia have reported a high prevalence and severity of ECC, which 90% at aged 3-5 years old with a higher mean def-t.

Diseases and abnormalities of teeth in school-aged children is one of the interferences of children growth and development process. The most common dental health problems in children is dental caries. Dental caries is an infectious disease that damages tooth structure. The process occurs because of a number of factors in the mouth that interact with each other. Alpers classifies three main factors: teeth, microorganisms, substrates, and one additional factor, that is time. In addition to the main factors in the mouth, there are external predisposing factors such as age, sex, socioeconomic status, oral hygiene, and cariogenic foods [2]. Dental health education should be

introduced as early as possible to the child, so they understand how to maintain healthy teeth and mouth correctly. Preschool aged children are one of the most vulnerable groups to dental and oral diseases, due to lack of behavior or habit that support the dental health [3]. In this case, the role of parents is very significant in maintaining the health and hygiene of children's teeth and mouth. Attitudes and behavior of parents who are the closest one to the child in the health care give a very significant effect on the attitude and behavior of children. A person who has a high level of education will have good knowledge and attitude about health, so that it will affect his/her behavior to be healthy [4].

According to the Indonesian Dentists Association (PDGI), child dental hygiene involves interaction between children, parents and dentists. The influence of parents is instrumental in shaping the behavior of children. Attitudes and behavior of parents, especially mother, who are usually people closest to the child in maintaining dental health, have a significant effect on the behavior of children [5]. A child should get serious attention from the parents even though they still have the deciduous teeth. The condition of the deciduous teeth will determine the growth of the child's permanent teeth. However, many parents assume that deciduous teeth are temporary and will be replaced by permanent teeth, so they often assume that damage to the deciduous tooth is not a problem.

In the parenting decision model, Hoover-Dempsey and Sandler identified role construct as fundamental variables that influence parental decision. Role construct relates to how parental accountability or responsibility perceives themselves in relation to their child's behavior. Hoover-Dempsey and Sandler proposed that parental construct about the role of parents are strongly influenced by the definition of parent roles and their beliefs about child development, child nurture, and what parents expect [6]. The role of parents is crucial as the basis for the formation

of supportive or not supportive behaviors of child oral hygiene [7]. While young children aged 4-5 years depend mainly on adults on decisions about their health, parental actions can impact on behaviors shown by children and adolescents at a later stage in their lives when they are able to make their own decisions about their health [8]. One well-validated decision-making model commonly used to test attitudes and behavior is the Theory of Planned Behavior (TPB). TPB suggests that intention affect behavior with intent, are influenced by attitudes (assessment of behavior as something that is advantageous/ disadvantageous), subjective norms (perceptions of social pressure to do or not to do a behavior), and perceived behavior control (PBC, perceived eases/difficulties to act a behavior), with PBC is predicting a behavior directly. In TPB, past behavior is also often included as an additional predictor of people's intentions and behaviors [9].

Objectives

The aim of this study was to predict the behavior of mothers to teach toothbrushing the preschool children using theory of planned behavior. Based on the construction of Theory Planned Behavior, the better attitudes and subjective norms associated with involvement in behavior and the greater the perceived control, the more likely it is that a person will form an intention to behave. Finally, intentions are expected to lead to behavioral performance as long as people are actually able to do so, that is, where they have actual control over the behavior.

Material and Method

This study were performed via a protocol approved by the Health Research Ethical Clearance Commission Faculty of Dental Medicine, Universitas Airlangga with ethical approval number: No. 109/HRECC.FODM/VII/2017. We used cross sectional design in this study. The cross sectional study recruited maternal group with inclusion criteria: biological parents of kindergarten children in Surabaya city. The sample used in this study was the mother of preschool children in Surabaya which chosen by random sampling method. The number of samples used in this study was 218. The sample characteristic are shown in Table 1. The study was conducted from Juni 2017 until Juli 2017. Before the study conducted, each samples were requested to complete the inform concent. This study had been through a series of ethical tests.

To collect the data, we asked the participants to fill the questionnaire. There were 35 questions which consisted of several components of TPB, that determine the mother behavior on how to teach tooth brushing to preschool children in Surabaya based on TPB. The questionnaire measure the effect of theory construct about intention to improve the oral hygiene behavior. All the variables were measured consistently, so the higher average score reflect more positive attitudes, positive subjective norms, and higher perceived behavior control toward oral health behaviors. Data was analyzed by calculating Correlation and Linear Test Regression of components of planned behavior theory where the result of p-value less than 0,05 is considered as statistically significant result.

Results

Table 1. Sample characteristics

Variables	Descriptions	Total Number (n)	%
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Education	Basic education (elementary school/junior high school/senior high school)	152	69,73
	Higher education	66	30,28
Employment	Not working	119	54,59
	Working	99	45,41
Salary	< IDR 1.000.000	50	22,94
	IDR 1.000.000 - IDR 3.000.000	121	55,51
	> IDR 3.000.000	47	21,56

The result of participants characteristic data is shown in Table 1. First, mother's last education which was classified into 2 categories, that was basic education (elementary school/junior high school/senior high school) with consisted 69,73% of total sample and higher education which consisted 30.28% of total sample. Second, the employment status of the mother, which categorized as working (45.41%) or not working (54.59%). Third, the percentage of maternal income per month classified into 3 that was IDR <1,000,000 (22,94%), IDR 1.000.000-3.000.000 (55,51%) and IDR > 3.000.000 (21,56%).

Table 2. The mean and standard deviation of TPB with socio-demographic

Socio-demographic		Attitude toward behavior			Subjective norms			Perceived behavior control			Intention			Behavior		
		Mean	SD	p-value	Mean	SD	p-value	Mean	SD	p-value	Mean	SD	p-value	Mean	SD	P-value
Education	High	28	3,62	0,446	55,48	20,377	0,016	26,36	4,23	0,669	28,67	3,125	0,43	4,36	0,922	0,17
	Low	27,68	3,096		62,88	19,978		26,05	4,335		28,14	3,143		4,56	0,77	
Employment	Not working	27,76	2,951	0,571	58,9	19,366	0,115	26,26	4,412	0,372	28,54	2,81	0,165	4,56	0,732	0,441
	Working	27,79	3,609		58,9	19,366		26,01	4,171		28,01	3,489		4,42	0,916	
Salary	IDR <1.000.000	27,9	2,306	0,391	61,7	20,528	0,764	26,82	3,415	0,615	28,12	3,075	0,924	4,79	0,505	0,168
	IDR 1.000.000-3.000.000	27,5	3,795		61,16	19,881		25,82	4,592		28,23	3,366		4,49	0,857	
	IDR >3.000.000	28,36	2,506		58,17	21,526		26,28	4,342		28,66	2,59		4,32	0,958	

p-value significant at <0,05

In Table 2, we analyzed the data using Mann-Whitney Test. The education variable toward subjective norms had p-value <0.05, which means there was a difference of higher

education and lower education to subjective norms variable. The education variable toward attitude, perceived behavior control, intention and behavior variables showed $p\text{-value} > 0.05$, which means there was no difference of higher education and lower education to variable other than subjective norms. Furthermore, employment variable showed $p\text{-value} > 0.05$ toward all components of theory of planned behavior, so it means that there was no difference between work and not working to components of theory planned behavior. The income variable showed $p\text{-value} > 0.05$ toward all components of theory of planned behavior, which means there was no difference between salaries to components of theory planned behavior.

In the table above mentioned that the higher education on attitude variables, PBC and intention had a higher mean compared with low education, while basic education to subjective norms and behavior variables showed a higher mean compared with higher education. Employed mother toward attitude variable had higher mean compared with unemployed one, whereas unemployed participants toward PBC, intention and behavior variables had higher mean. Participants that had income IDR $> 3,000,000$ toward attitude and intentions had higher mean compared to lower income amounts. The Spearman correlation of this study is shown in Table 3.

Table 3. Correlation test of TPB components

	Attitude	Subjective norm	PBC	Intention	Behavior
Attitude	1				
Subjective norm		1			
PBC			1		
Intention	0,478*	0,069	0,409*	1	
Behavior			0,416*	0,399*	1

* $p\text{-value}$ significant at $< 0,05$

Based on the diagram 1, we could see in table 3 that the variable attitude had a significant relationship with the variable intention with $p\text{-value} < 0.05$ and correlation coefficient (r) 0.478,

which means attitude had significant relationship with intention. In addition, subjective norm had no significant relationship with intention with p-value 0,312 and correlation coefficient (r) 0,069, which means subjective norm had no significant relationship with intention. Perceived behavioral control had a significant relationship with intention with p-value <0.05 and correlation coefficient (r) 0.409, which means PBC had a significant relationship with the intention. Furthermore, intention had a significant relationship with behavior with p-value <0.05 and correlation coefficient (r) 0,399, which means intention had less significant relationship with behavior. Subsequently, PBC had a significant relationship with behavior with p-value <0.05 and correlation coefficient (r) 0.416, which means PBC had a significant relationship with behavior.

Diagram 1. The hypothesis of relationship among TPB components

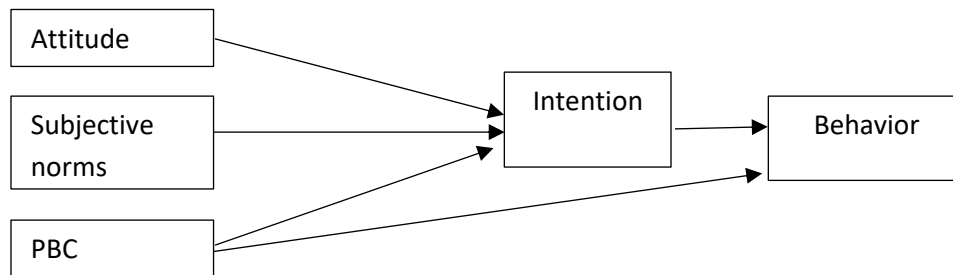


Table 4. Association of Theory of Planned Behavior variables toward intention

Variables	<i>p-value</i> ANOVA Regression	R ²	Correlation coefficient	<i>p-value</i>	Regression coefficient
Attitude	< 0.0001	0.376	0.570	< 0.0001*	0.601
Subjective norms			-0.101	0.074	0.033
Perceived Behavior Control			0.109	0.081	0.340

* p-value significant at <0.05

Diagram 2. Linear regression test of TPB components

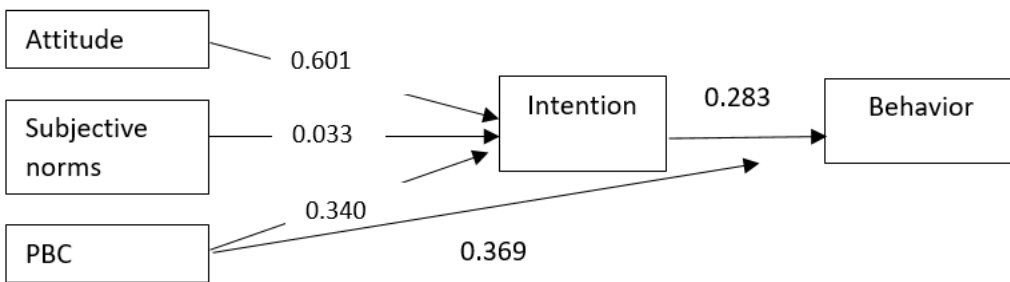


Diagram 2 showed that among the variables, it showed that attitude had most significant relationship to intention with $p < 0.0001$.

Discussion

TPB is a theoretically structured framework that predicts and explains human behavior according to beliefs and attitudes. This theory was first proposed by Ajzen in 1975 emphasized the importance of one's intention as a determinant of behavior. Such behavioral intention is influenced by the individual's attitude toward behavior, subjective norms and perceived behavior control. TPB aims to explain the desired behavior through three factors: personal judgment on questionable behavior (attitude), perceived social pressure on (not) doing such behavior (*subjective norm*) and the perceived easiness and difficulty of doing a behavior (*perceived behavioral control*) [10]. Intention to act a behavior can be predicted from attitudes, subjective norms, and perceived behavior control.

The first important determinant of behavioral intention is the attitude that refers to "the extent to which a person has a good or poor behavior judgment". Ajzen suggested that attitude toward this behavior is determined by beliefs about the consequences of a behavior or briefly

called behavioral beliefs. Beliefs relate to the individual's subjective judgment of the world around him, the individual's understanding of himself and his environment, is done by associating certain behavior with the various advantages or disadvantages that might be obtained if the individual does or does not the certain behavior. Behavior belief indicates an individual's understanding of the consequences of a particular behavior. This belief can reinforce attitudes toward that behavior if based on an individual's evaluation, the data is obtained that the behavior can provide benefits for him [11].

Subjective norm. The second construct that affects the intention is individual evaluation of the social pressures that affect the individual to perform or not perform an action. The social pressure that comes from the people around is important to him/her (significant others). Subjective norms can be determined from a person's *normative beliefs* about how significant others think or expect someone to do something or not to do it at all. In the *Theory of Planned Behavior*, the *normative belief* of a person is balanced by the *motivation to comply* possessed by a person. Motivation to comply is defined as the motivation or willingness of a person to fulfill or not the significant expectation of others with all the considerations and risks to be faced that ultimately affect their intention [12].

Perceived behavioral control. The PBC construct is added to the model to fill the gap in TRA, in an attempt to deal with situations where the individual may lack a full control over the behavior. PBC is defined as, given the presence or absence of required resources and opportunities, individual perceptions of the ease or difficulty in performing behavior. In short, in performing a particular behavior, behavior correlates with the individual's belief in his/her ability to perform such behavior. PBC is assumed to reflect past experience and partly from second-

hand information through the exchange of information by family, friends and factors that can control the degree of difficulty perceived in conducting interest behavior [13].

Linear regression test conducted to test how strongly the variables that affect the intent which was assessed using Goodness of fit statistic with the result the value $R^2 = 37.6\%$ (0.376). This result showed that attitude toward behavior, subjective norm, and PBC had significant association to intention. The value of influence was classified as a large effect [14].

Based on the construction of Theory Planned Behavior, in this study the most powerful variables affecting the intention were attitude and perceived behavior control. In the above correlation statistic test showed the result of attitude toward behavior, the result of the correlation coefficient was positive 0,478 with p value <0.0001 . It showed that there was significant effect of attitude variable to intention. The result of correlation coefficient on PBC variable was positive (0,409) with p-value <0.0001 . Based on this, it could be concluded that there was a significant effect of PBC variable to intention.

The results of the analysis above showed that there were two variables that had significant influence on intention. The higher the attitude (attitude toward behavior) and the PBC of a person, the higher the intention of the mother in teaching the child brushing teeth. In the context of families, children should not be regarded merely as passive care recipients in the daily routine of health measures, as they play an active role in making healthy choices [15]. The role of mothers can contribute to healthy family activities. Thus, families, especially mothers, should promote the health of children and their children's ability to develop a healthy lifestyle. The significant influence of the mother's attitudes toward the oral health of children can be attributed to the impact of their attitudes toward the behavior of their children [16]. In addition, this refers

to the deep interactions between mother and child, and supports the mother's role as an important source of perception and acceptance of children to attitudes, values, and behaviors especially during critical times to establish attitudes and beliefs and shaping individual health behaviors [17].

Based on the results of the analysis, this study was considered successful enough to reveal the factors that affect the intention. The dominant factors influencing mother's behavior in teaching toothbrushing to children are factors that are purely derived from within oneself, namely: individual attitudes and individual self-control. On the other hand, the results of this study indicate that external factors such as the influence of others (subjective norms) are not affecting the participants [12].

Effect of attitude variable on intention can be explained that to overcome the problem of tooth and mouth of child hence required attention and supervision of parent especially mother attitude in control and support child to do dental and oral care regularly. The attitude that should be done by parents, especially mothers is to teach children to always take care of teeth by diligently brushing teeth. In this attitude variable, mother believes that by teaching tooth brushing in children properly and correctly then the child will be protected from some dental and mouth disease [18]. Attitude is a reaction or response of a person to the stimulation or object. Mothers have an important role in preventing caries disease. Actually, they transmit habits and rituals. To be effective they must have good knowledge about oral prevention. The overall attitude of mothers and attitudes toward their child's oral hygiene has been associated with caries occurrence and oral hygiene status and a positive mother's attitude has been associated with increased teeth brushing, decreased caries lesions and good oral hygiene on their children [13, 14]. Factors influencing attitudes include personal experience, socioeconomic status, mass

media and knowledge and religion. Knowledge or cognitive is a very important domain in shaping the action of someone (overt behavior) because knowledge is one predisposing factor of the formation of a whole attitude or total attitude based on the three components of the belief idea, the concept of an object, the tendency to acts (tend to behave) . Attitude is not only influenced by knowledge but on some other factors of personal experience, the influence of others who are considered important to others around us, the influence of culture, mass media, religious institutions, the influence of emotional factors. Therefore, according to the theory that low knowledge will tend to be negative in determining attitudes or otherwise high knowledge will be positive in determining attitude [19]. This result is in accordance with Skeie et al., where mothers with low levels of education tend to have a tooth attitude that not good. There are several possible explanations for poor teeth attitudes in older people with low level of education. Norms and attitudes of parents may be influenced by the norms of child care existing in their community and transmitted from one generation to another [20, 21]. In parents with low level of education, oral health may not be assessed positively and importantly as among highly educated parents [22]. Moreover, if economic constraints exist in daily life, good oral health habits may not be a priority of parents. Also, parents with low level of education often lack the skills to process certain health-related information and to interact with health institutions and professionals, leading to less positive attitudes [23]. In general, attitudinal levels of receiving, responding, respecting and being responsible. In the attitude assessment is differentiated into positive and negative.

The influence of PBC variables can be explained when mother is faced with circumstances must choose to teach children to brush their teeth properly and correctly or not. As mentioned earlier, PBC is a level of perception of one's own ability to perform an action related

to the risks or constraints. PBC in the context of this study related to the ability of the mother. Positive impacts if children are taught to brush their teeth properly beside a strong teeth and fresh breaths, mouths is clean enough from germs and bacteria that cause dental and oral diseases [18]. Thus, it is hoped that mother is able to do the health care of her children, especially in dental and oral care because mothers are considered role models in their child's health behavior in transferring acceptable values, norms and behaviors to their children [24]. Therefore, parents, especially mothers, function as social models for children. Dental caries is a disease that evolved through the biological interactions of acidic bacteria root complex, fermentable carbohydrates and host factors such as teeth and saliva [25]. For decades, species of acidogenic bacteria *Streptococcus mutans* have been considered the main causal agents of dental caries. This process occurs so slowly that most children and parents are unaware of and ignore the presence of dental plaques that can cause tartar so that many children with dental defects are mostly dental caries, which is frightening to everyone, especially parents [19]. It is also a control of mother in the ability to teach toothbrushing.

The absence of the influence of factors or subjective norm variable in this study can be explained from the context of study subjects. The subjective norm is the influence of the environment or the people who are considered important to someone. In the context of mother, the person who is predicted to have great influence in various ways is a husband's friend [12]. However, it turns out that in teaching toothbrushing in children, those closest people have no significant effect. When associated with the two other variables that affect intention, the results are not significant subjective norm variable to support the opinion that the behavior of the mother in teaching toothbrushing on the child is very dependent thoughts and internal factors within the individual.

Conclusion

When a mother performs a toothbrushing behavior to preschooler in Surabaya based on Theory of Planned Behavior, it is closely related to attitude and perceived behavior control variables, whereas subjective norms variable is not related to mother's behavior. In this study, it can be explained that although the mother surrounding environment does not support the teaching toothbrushing to the children, however mother has a positive attitude and able to do, subsequently the mother will acts a behavior of teach toothbrushing to their children.

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Conflict of interest

The authors declare no conflict of interests.

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