

Supplementary material

Table S1 | Reported associations between socio-psychological determinants and different target behaviors for all included studies

Studies included in the review are grouped according to safe water option; depicting authors, psychological health theory used, target behavior and country of study. Results were coded as “+” for significant associations and “-” for non-significant associations; “n.a.” means that this information is not available for individual factors. The R^2 value from statistical regression analysis is given as the coefficient of determination for each summary model wherever this was reported.

TPB = Theory of Planned Behavior (Fishbein & Ajzen 2010); HBM = Health Belief Model (Rosenstock 1974); PMT = Protection Motivation Theory (Floyd *et al.* 2000); HAPA = Health Action Process Approach (Schwarzer 2008); TDI = Theory of Diffusion of Innovations (Rogers 2010); RANAS = Risk, Attitude, Norm, Ability, Self-Efficacy Model (Mosler 2012).

⁺ The factors for vulnerability and severity were combined as a general risk factor. ⁺⁺ Exemplary items can be found in the supplementary material at http://www.eawag.ch/fileadmin/Domain1/Abteilungen/ess/Working_papers/Working_paper_2015-01_Lilje_homepage.pdf.

Table S2 | Operationalization of psychological constructs

Where available, an exemplary item from each study is given for an understanding of how the factors were operationalized. Where this information was not accessible, the closest definition or description of the factor is displayed. Empty fields mean that this factor was not operationalized in the respective study.

Some factors in some studies have been assessed, but were then not reported in the regression models. This means that some of the cells with a given operationalization in Table S2 can be without a result (n.a.) in Table S1.

⁺⁺ Exemplary items can be found in the supplementary material section at http://www.eawag.ch/fileadmin/Domain1/Abteilungen/ess/Working_papers/Working_paper_2015-01_Lilje_homepage.pdf.

Authors	Theory applied	Target behavior; (Country)	Vulnerability	Severity	Health knowledge	Instrumental beliefs	Affective beliefs	Descriptive norm	Injunctive norm	Personal norm	Action knowledge	Self-efficacy (S-E)	Maintenance S-E	Recovery S-E	Action planning	Coping planning	Remembering/ forgetting	Commitment	N	R ²	Reference
POU household water treatment																					
Altherr et al. (2008)	TPB	SODIS usage; (Nicaragua)	n.a.	n.a.	o	o	+	o	o	n.a.	+	o	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	64		log table 2; .863 page 9
Graf et al. (2008)	HBM; TPB	SODIS usage; (Kenya)	o	o	+	+	n.a.	+	n.a.	n.a.	+	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	491		log table 3; .245 page 351
Kraemer & Mosler (2010)	TPB and others	SODIS usage; (Zimbabwe)	n.a.	n.a.	o	o	o	n.a.	o	n.a.	n.a.	+	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	878		log table 5; .700 page 73
Heri & Mosler (2008) ⁺	TDI	SODIS usage; (Bolivia)	+	+	n.a.	+	+	+	o	n.a.	n.a.	+	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	536		table 2; .690 page 551
Tamas et al. (2013)	HBM; PMT; HAPA	SODIS water consumption; (Bolivia)	n.a.	o	o	o	+	o	+	n.a.	+	o	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	377		table 2; .807 page 1400
Tamas et al. (2013)	HBM; PMT; HAPA	Consumption of boiled water; (Bolivia)	n.a.	o	o	o	+	+	o	n.a.	n.a.	o	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	375		table 2; .522 page 1400
Lilje et al. (2015) ⁺⁺	RANAS	Chlorination of domestic drinking water; (Tchad)	o	+	o	o	o	+	o	o	o	+	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	857		log table S3; .348 page SM4
Huber et al. (2011)	RANAS	Consumption of fluoride free water from household filter; (Ethiopia)	o	o	o	+	+	o	o	n.a.	n.a.	+	n.a.	n.a.	n.a.	n.a.	o	o	156		log table 4; .679 page 274
8 studies			1/3/4	2/4/2	1/6/1	3/5/0	4/3/1	4/3/1	1/6/1	1/2/5	3/1/4	2/5/1	1/0/7	0/0/8	0/0/8	0/0/8	0/1/7	0/1/7			.607
Switching to safe source																					
Huber & Mosler (2012)	RANAS	Consumption of fluoride free water from community filter; (Ethiopia)	o	o	+	+	+	+	o	o	n.a.	o	n.a.	n.a.	o	o	+	+	203		table 2; .568 page 7
Mosler et al. (2010)	PMT; TPB	Consumption of arsenic free deep tubewell water; (Bangladesh)	o	o	o	o	+	+	+	n.a.	n.a.	+	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	176		table 4; .590 page 1321
Inauen et al. (2013)	RANAS	Use of arsenic-safe drinking water options; (Bangladesh)	+	o	n.a.	+	+	+	+	n.a.	n.a.	+	n.a.	n.a.	n.a.	o	n.a.	n.a.	867		table 3; .688 page 7
Inauen & Mosler (2014)	RANAS	Use of arsenic free shallow tubewell; (Bangladesh)	+	o	o	+	+	+	+	n.a.	n.a.	o	+	+	n.a.	o	n.a.	+	363		log table 2; .894 page 8
4 studies			2/2/0	0/4/0	1/2/1	3/1/0	4/0/0	4/0/0	3/1/0	0/1/3	0/0/4	2/2/0	1/0/3	1/0/3	0/1/3	0/3/1	1/0/3	2/0/2			.685
Hygienic handling of water																					
Stocker & Mosler (2015)	RANAS	Cleaning of water storage container; (Benin)	o	+	n.a.	+	o	+	o	+	n.a.	+	+	o	o	o	+	+	905		table 4; .625 page 6
Water testing																					
Flanagan et al. (2015)	RANAS	Domestic well water testing for arsenic; (USA)	o	o	+	+	o	+	o	o	+	+	n.a.	n.a.	o	n.a.	o	o	278		table 5; .415 page 1280
total			3/7/4	3/9/2	3/8/3	8/6/0	9/4/1	10/3/1	4/9/1	1/3/9	4/1/9	8/5/1	2/0/12	1/1/12	0/3/11	0/4/10	2/2/10	3/2/9			0.617

Authors, (Year)	Target behavior, (Country)	Vulnerability	Severity	Health knowledge	Instrumental beliefs	Affective beliefs	Descriptive norm	Injunctive norm	Personal norm	Action knowledge	Self-efficacy (S-E)/ Perceived behavioral control (PBC)	Maintenance S-E.	Recovery S-E.	Action planning	Coping planning	Remembering/ forgetting	Commitment	Reference	Additional factors		
POU household water treatment																					
Altherr et al. (2008)	SODIS intention and usage; (Nicaragua)			The second question asked the interviewees to explain the causes of diarrhea. (No item given)	Participants were asked whether a person had confidence that the water treated by SODIS is disinfected or not. (No item given)	"After all we have talked about, do you think it is good to use SODIS or not?"	Participants were asked to estimate the number of SODIS users among their neighbors. (No item given)	"If all your neighbors were using SODIS and you were not, would you start using it as well or would you not do it precisely because all of them were using it?"		To assess their knowledge about SODIS, the interviewees were asked to explain its functioning. (No item given)	The interviewees were asked how easily they could get hold of suitable bottles for the use of SODIS. (No item given)								page 6 ff		
Graf et al. (2008)	SODIS usage; (Kenya)	"Are your young children at risk of diarrhea?"	"How likely is it that your young children will die if they have severe diarrhea?"	"Why do young children get diarrhea?"	"How likely is it that your young children get diarrhea when they drink untreated raw water?"		"Do your family members want you to treat raw water before drinking?"			"Can safe water be drunk if you mix it with untreated raw water?"										page 344	
Kraemer & Mosler (2010)	SODIS intention and usage; (Zimbabwe)			"Are there any problems with the quality of your drinking water?"	"How time-consuming is it that you treat your drinking water with SODIS?"	"How do you feel about SODIS?"		"How do other people think about you when you do SODIS?"		"Had you heard about SODIS before?"										Habit: "How often does it happen that you intend to do SODIS and then forget to do so?"; Self-persuasion	page 67 ff
Heri & Mosler (2008)	SODIS usage; (Bolivia)	Participants' perceived likelihood of contracting diarrhea when drinking untreated water. (No item given)	Participants were asked to what extent their health to be affected when they suffered from diarrhea. (No item given)	The relative advantage of SODIS was measured on the three dimensions of cost savings, taste of the water, and greater water safety. (No item given)	Affective beliefs were operationalized by inquiring whether the application of SODIS is perceived as enjoyable or disturbing. (No item given)	The descriptive norm was calculated as the percentage of people known to be SODIS users. (No item given)	The perceived expectations of the participants' social network were recorded by asking whether and, if yes, how often participants were told to treat their drinking water. (No item given)			Perceived availability of the resources necessary to use SODIS for a sustained period of time was recorded. (No item given)										page 546 ff	Habit: Self-reported habit-strength of treated water consumption. (No item given)
Tamas et al. (2013)	SODIS water consumption; (Bolivia)		Perception of the severity of diarrhea. (No item given)	Knowledge of the causal relation between water and diarrhea. (No item given)	"Do you think SODIS water has a negative or a positive health impact?"	Affective beliefs were concerned with the taste perception of each water type. (No item given)	Participants were asked what proportion of other people in the community was estimated to consume SODIS water. (No item given)	Participants were asked what other people would think if SODIS water had been or were to be consumed. (No item given)		To assess participants' knowledge of SODIS preparation, they were asked to explain its function. (No item given)	Participants were asked about the perceived difficulty of carrying out SODIS and the perceived availability of PET bottles. (No items given)									page 1397 ff	Habit: Self-reported habit-strength of treated water consumption. (No item given)
Tamas et al. (2013)	Consumption of boiled water; (Bolivia)		Perception of the severity of diarrhea. (No item given)	Knowledge of the causal relation between water and diarrhea. (No item given)	"Do you think boiled water has a negative or a positive health impact?"	Affective beliefs were concerned with the taste perception of each water type. (No item given)	Participants were asked what proportion of other people in the community was estimated to consume boiled water. (No item given)	Participants were asked what other people would think if boiled water had been or were to be consumed. (No item given)		Perceived availability of firewood. (No item given)										page 1397 ff	Habit: "How much do you treat your drinking water rather automatically without having to think about it a lot?" Social support; Social discourse; Action control
Lilje et al. (2015)**	Chlorination of domestic drinking water; (Tchad)	"How high do you feel is the risk that your child under the age of 5 gets diarrhea?"	"How severe do you rate the impact on the health of your child below 5 years when it has diarrhea?"	"Can you name the major causes for getting diarrhea?"	"How effortful is it for you to always treat your drinking water?"	"How much do you like or dislike the taste of treated drinking water?"	"What do you think, how many people of your community treat their drinking water?"	"People who are important in the community (e.g. Imam, Chief of village, etc.) how much do they promote that you should treat your drinking water?"	"Do you feel a personal obligation to treat your drinking water?"	"Please answer whether the following statement is correct: After chlorination, you have to wait at least 30 min until the water is safe to drink."	"How certain are you that you will always be able to treat your drinking water before drinking?"	"How confident are you that you will be able to treat your drinking water even if you do not feel like doing so in the moment?"	"How confident are you that you will be able to continue to treat your drinking water even when you have forgotten to do this for a while?"	"Do you have any plans how to make sure that you can always treat your drinking water? Tell me about them."	"Do you have a specific plan how to deal with these difficulties? Please tell me how you would deal with this."	"How much do you have to remind yourself to treat your drinking water?"	"How much do you feel committed to treating your drinking water?"			table S3; page SM4	

Huber et al. (2011)	Consumption of fluoride free water from household filter; (Ethiopia)	"How high or low do you feel are the chances that someone of your family develops skeletal fluorosis?"	"Imagine that you contracted dental/skeletal fluorosis, how severe would be the impact on your life in general?"	"How can you prevent getting fluorosis?"	"Do you think using the filter takes a lot of effort?"	"How much do you like or dislike consuming filtered water?"	"How many of your neighbors you know who have a fluoride removal filter?"	"Most of my neighbours think I should use the filter."	"I feel a strong personal obligation to consume filtered water."	"How confident are you that you will be able to use the filter regularly in the next month?"		"How difficult is it to remember filling the filter with water?"	"Do you feel committed to use the filter?"	Habit: "How much do you feel that you fetch water from the community filter as a matter of habit?"			
switching to safe source																	
Huber & Mosler (2012)	Consumption of fluoride free water from community filter; (Ethiopia)	"How high or low do you feel are the chances that someone in your family will develop skeletal fluorosis?"	"Imagine that you contracted skeletal fluorosis; how severe would the impact be on your life in general?"	"How can you prevent getting fluorosis?"	"Is the community filter far from your home?"	"How much do you like or dislike the taste of food cooked with filtered water?"	"How many people from your kebele (community) fetch water from the community filter?"	"Most of my neighbors think I should fetch water from the community filter."	"I feel a strong personal obligation to fetch water from the community filter."	"I believe I have the ability to fetch water from the community filter regularly in the next month."		"Do you have a detailed plan regarding when during the day to start collecting from the community filter?"	"Have you made a detailed plan regarding what to do if the community filter breaks?"	"How often does it happen that you forget to fetch water from the community filter?"	"Do you feel committed to fetching water from the community filter?"	Habit: "How much do you feel that you fetch water from the community filter as a matter of habit?"	
Mosler et al. (2010)	Consumption of arsenic free deep tubewell water; (Bangladesh)	Respondents were asked to rate both their personal likelihood of contracting arsenicosis. (No item given)	Respondents were asked to rate how serious they perceived the personal negative consequences of arsenic contamination to be. (No item given)	Respondents were asked whether they had heard of arsenic contamination, what the sources of arsenic poisoning are. (No item given)	Respondents' perceived expenditure of time to collect water from the deep tubewell. (No item given)	Respondents' beliefs about the taste. (No item given)	Respondents were asked to indicate whether deep tubewells were used by their families or the members of their villages. (No item given)	"Others think negatively about people using deep tubewells."		Respondents' ratings of their confidence in their ability to provide arsenic-safe water for their families. (No item given)						page 1318	
Inauen et al. (2013)	Use of arsenic-safe drinking water options; (Bangladesh)	"How high or low do you feel are the chances that you get arsenicosis?"	"Imagine that you contracted arsenicosis, how severe would be the impact on your life in general?"		"Do you think that using the filter / collecting water from the arsenic-safe option is time-consuming?"	"How much do you like or dislike drinking water from the arsenic-safe option?"	"How many people outside your family drink water from the arsenic-safe option?"	"How good or bad would you say it is to drink water from the arsenic-safe option?"		"Are you sure that you can use the filter to prepare / that you can collect as much arsenic-safe water as you need within the next year?"			"Have you made a detailed plan regarding what to do when the arsenic-safe option gets broken?"			Supporting information	
Inauen & Mosler (2014)	Use of arsenic free shallow tubewell; (Bangladesh)	Participants were asked how high or low the chances were that they or someone in their family would develop arsenicosis. (No item given)	"Imagine that you contracted arsenicosis, how severely would it impact your life in general/your social life/your economic situation?"	The questions were concerned with knowledge of [...] which medical conditions could be caused by arsenic [...]. (No item given)	"Do you think that collecting water from the arsenic-safe option is time-consuming?"	Participants were asked, for example, whether they liked collecting water from the safe well. (No item given)	Participants were asked to name the number of people outside their families or their village who collected water from the safe water option. (No item given)	"Overall, how much would people who are important to you approve or disapprove of you collecting water from the arsenic-safe water option?"		Participants were asked, for example, how difficult or easy it was to find time to collect water from the arsenic-safe well. (No item given)	Participants answered how confident they felt about collecting water from the safe option 'even if they had to walk a long distance[...]. (No item given)	"Imagine that you stopped going to the safe well for several days. How confident are you to start collecting water from the safe option again?"	"Have you made a detailed plan when during the day to start collecting water from the arsenic-safe option?"	"Have you made a detailed plan of what to do when the arsenic-safe option is broken?"	"How many times did you forget to collect water from the arsenic-safe option in the last week?"	Participants were asked how committed they felt to collecting water from the safe well. (No item given)	Action control: "How much did you pay attention so you do not forget to collect water from the mitigation option?"
hygienic handling of water																	
Stocker & Mosler (2015)	Cleaning of water storage container; (Benin)	"How high do you feel the risk is that you will get diarrhea?"	"Imagine that you contracted diarrhea. How severe would the impact be on your life in general?"		"How certain are you that cleaning your water storage container with soap and water prevents you and your family from getting diarrhea?"	"How much do you like or dislike cleaning your water storage container with soap and water?"	"How many people of your localité do you think clean their water storage container with soap and water?"	"People who are important to you, do they approve or disapprove that you clean your water storage container with soap and water?"	"How much do you feel a personal obligation to clean your water storage container with soap and water?"	"How much do you think you are always able to clean your water storage container with soap and water?"	"How confident are you that you can clean your water storage container with soap and water even if urgent tasks arise that interfere with cleaning the container?"	"Imagine that you have not cleaned your water storage container with soap and water for several days. [...] How confident are you that you will start cleaning the container with soap and water again?"	"How do you make sure that you always have soap and water for cleaning your water storage container?"	"Do you have a plan what to do if there is no soap for cleaning your water storage container?"	"How often does it happen that you forget to clean your water storage container with soap and water?"	"How important is it for you to clean your storage container with soap and water?"	Habit: "How much do you feel that you clean your water storage container with soap and water as a matter of habit?"
water testing																	
Flanagan et al. (2015)	Domestic well water testing for arsenic; (USA)	"My family is at risk for drinking contaminated well water."	"Adverse health effects from drinking well water are overblown."	"Wells in this area are at risk of being contaminated."	"Water testing results are helpful to protect the health of my family."	"I feel safer having my well tested by a lab."	"I believe most of my neighbors regularly test their well water."	"I think most of my neighbors expect me to regularly test my water."	"I feel personally obligated to test my well water."	"I know who to contact to get my well water tested."	"I am confident I can manage regularly testing my water."		"I plan to have my well water tested within the next year."	"I would like to get my well tested, but I keep forgetting to."	"I am committed to monitoring the quality of my well water."	appendix	

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