SOCIAL MARKETING RESEARCH SERIES

PSI/Malawi Project TRaC – Malaria and Diarrheal Disease

The PSI Dashboard

Malawi
March 2006

Research Department
PSI/Malawi
P.O. Box 529
Blantyre, Malawi

Research Division
Population Services International
1120 Nineteenth Street NW, Suite 600
Washington, D.C. 20036

PSI's Core Values
Bottom Line Health Impact * Private Sector Speed and Efficiency * Decentralization, Innovation, and Entrepreneurship * Long-term Commitment to the People We Serve

SUMMARY

Acknowledgements: The authors of this document are grateful for the guidance and assistance of Hibist Astatke, Steven Chapman, Kerry Richter and Dhaval Patel, as well as the rest of the PSI Research Division. PSI/Malawi would also like to recognize the Ministry of Health (MOH), the U.S. Agency for International Development (USAID), the United Nations Children's Fund (Unicef), the Procter & Gamble corporation (P&G), and the Japan International Cooperation Agency (JICA), for their support of PSI/Malawi's malaria prevention and diarrheal disease control programs.

Background & Research Objectives: This study was conducted to obtain baseline indicators of important behaviors and factors impacting the health of children under five nationwide with respect to malaria and diarrheal disease. Future survey rounds will be conducted approximately every two years to monitor changes in these indicators. In addition to providing a means of tracking the change in key indicators over the life of the project, the results of this baseline study are being used to inform the programmatic decision-making of the *Chitetezo* ITN, *M'bwezera Chitetezo* insecticide treatment, *Thanzi* ORS and *WaterGuard* point-of-use water treatment social-marketing programs. A key feature of the study is the inclusion of segmentation analysis. Segmentation involves dividing the at-risk population into those that perform the desired behaviors, and those who do not. The differences between these groups of 'behavers' and 'non-behavers' are then analyzed, enabling us to identify the opportunity, ability and motivation factors (OAM, see Annex 4) that influence or correlate with the desired behaviors. Armed with this information, we are better able to focus our program efforts and resources on modifying those particular factors and thus inducing sustained behavior change. For example: if there are no differences in perceived availability to purchase ITNs between users and non-users, then we know that availability is not a barrier to use. If, however, there are differences in motivation, then we know that we should focus on enhancing the identified motivation factors that correlate with ITN use. As part of the segmentation analysis, we also segment behavers and non-behavers based on their different population characteristics (age, education, religion, etc.), to enhance our ability to target the high-risk groups and/or non-users.

By including segmentation in this and in future surveys, PSI/Malawi will ensure even greater use of evidence for programmatic decision-making. This is designed not to replace subjective judgment, experience and intuition, but rather to complement it.

This report also provides an evaluation of the impact of PSI/Malawi information, education and communication (IEC), and advertising and promotion (A&P) efforts. Evaluation involves examining associations between behaviors and scores for OAM factors potentially affecting those behaviors with varying levels of exposure to PSI/Malawi interventions. This enables us to determine, for example,

whether caregivers with higher levels of exposure to PSI/Malawi interventions are more likely to use ITNs, or display greater self-efficacy for net use, than those with lower levels of exposure.

Description of Intervention: PSI/Malawi is working to prevent malaria and control diarrheal disease through the social marketing of several maternal and child health products, namely *Chitetezo* nets (ITNs), launched in October 1998; *M'bwezera Chitetezo* retreatment kits, launched in February 1999; *Thanzi* ORS, launched in May 1999; and *WaterGuard* safe water solution, launched in June 2002.

Methodology: The study assessed indicators among primary caregivers of children under five resident in every district of the country apart from Likoma Island (excluded for logistical reasons). A sample size of N=2,725 was aimed for, with 2,880 (predominantly female) respondents being interviewed and analyzed. A total of 149 Enumeration Areas (EAs) were identified for the survey, from 128 Traditional Authorities (TAs). The selection of the sample in each TA employed a 'Probability Proportional to Size' (PPS) sampling scheme. The interviews were administered to the primary caregiver in each household.

PSI/Malawi also incorporated the use of multi-item scales into the survey's questionnaire. The use of scaled response options (e.g. strongly disagree, disagree, agree, strongly agree) allows for the measurement and comparison of the various OAM factors studied, with the highest score representing the theoretically most desirable response and the lowest score representing the least desirable. The scales enable us to capture variations on OAM indicators and report data in terms of mean scores on OAM variables such as 'Knowledge', 'Self Efficacy', 'Social Support', etc., for individuals as well as groups. This use of scaled responses can prove highly valuable for segmentation analysis and evaluation. For example: ITN users may exhibit a mean score of 3.2 on the Self Efficacy scale, against 2.8 for non-users, and we can determine if such a difference is statistically significant or not.

Main Findings: The most significant programmatic conclusions that PSI/Malawi can draw from this study are: the importance of product Availability for increasing net ownership, use and treatment, ORS use, and point-of-use water treatment. Self Efficacy was also found to be important for net ownership and use, and water treatment. Access to mass media, in nearly every case, is positively correlated with the behaviors of interest. Wealthier, better-educated, married people are also more likely to behave in ways that preserve and enhance their children's health.

In addition to examining the significant differences between behavers and non-behavers, it is also important to note how these two groups do *not* differ. For example, there were no differences in Self

Efficacy between caregivers who had treated their nets and those who had not. Similarly, there were no differences in perceived Availability between ORS users and non-users.

The data indicates that nearly 97% of net-owning households in Malawi own nets promoted and distributed by PSI/Malawi. 77% are distributed in partnership with the MOH's National Malaria Control Program (green *Chitetezo* nets), and 20% are sold through commercial channels (blue *Chitetezo* nets). *Thanzi* accounts for 75% of ORS use in the country, while 41% of households that treat their water do so with *WaterGuard* (despite the minimal funding received till date for this product).

Higher levels of exposure to PSI/Malawi IEC and A&P were in most cases correlated with higher OAM scores and better behavior – net ownership and treatment, water treatment, and hand washing. There is less evidence of impact on actual net use, and no evidence of impact on ORS use. It is important to note that IEC and A&P has been very limited for these products, primarily due to funding constraints for ORS and persistent net supply problems.

Key Programmatic Recommendations: In order to successfully promote net ownership, consistent (year-round) net use, net treatment, and water treatment, it is recommended that efforts focus on enhancing Self Efficacy (confidence in the ability to protect one's children), particularly among poorer, less-educated caregivers. In order to increase net ownership, use and treatment, ORS use, and *WaterGuard* use, it is also recommended that PSI/Malawi simply increase the real and perceived Availability of these products.

Given the significance of Media Access in the segmentation findings, PSI/Malawi should also continue its use of mass media channels such as radio and wall signs in its efforts to effect behavior change, while exploring means to reach those with poorer access to these channels.

MONITORING TABLE AND ANALYSIS

As mentioned above, this study was conducted to establish baseline information on key indicators related to the health behavior of caregivers of children under five. The Monitoring Table below presents the values of these key indicators and OAM factors.

Table 1
Monitoring Table: Behavior related to malaria prevention and the control of diarrheal disease; selected OAM factors; exposure to PSI/Malawi IEC and A&P; and population characteristics
Risk Group: Caregivers of children under five (N = sample size of population of interest)

No.	Item	Response	%	N
Behavior: Malaria Prevention				
301	Mosquito net ownership (at least one net in the household)		62	2880
315a	Children under five who slept under an ITN the previous night		20	4010
315b	Pregnant women who slept under an ITN the previous night		21	161
302	Reported reasons for non-ownership	No need Don't know where to get Don't like using them Expensive/money issues Torn/worn out Other	4 3 4 70 11 8	1093
303	Mean number of nets (in net-owning households)	1.84 nets		1783
304	Color of nets (of all nets owned)	Blue Green Other	20 77 3	3004
305	Received a treatment kit along with the net	Yes No/not sure	93 7	3004
306	Net ever been treated		96	3004
307	Net treated immediately after purchase		89	3004
309	Net treated in the last 12 months		83	3004
310	Treated by:	Female HoH Male HoH Health worker Other	54 18 25 3	3004
311	Treatment suggested by:	Female HoH Male HoH Health worker Other	50 22 27 1	3004
312	Net ever washed		82	3004
313	Nets slept under last night (of all nets owned)		41	3004
314	Reported reasons for not sleeping under a net (among owners)	Too hot No mosquitoes Other	40 52 8	1165
316	Source of nets	Health facility Community Shop Other	78 4 16 2	3004
317	How long does it take for a net to wear out? (among owners)	1-2 years 3+ years Don't know	12 27 61	1783
318	How often do you sleep under your net? (among owners)	Every night Most nights Occasionally Only when lots of mosquitoes	48 17 14 20	1783
319	How often do your children sleep under a net? (among owners)	Every night Most nights Occasionally Only when lots of mosquitoes	48 14 15 21	1783
320	What times of year do you sleep under a net? (among owners)	All year round Rainy season Other	17 72 11	1783

321	What times of year do your children sleep under nets? (among owners)	All year round Rainy season Other	18 71 11	1783
322	Other uses of mosquito nets observed and reported by respondents	Fishing Trapping birds Covering windows	36 5 7	2880
323	Ever bought a net and then sold it to someone else (among owners)		5	1783
324	Has anyone in your home suffered from malaria in the last year?	Yes No Don't know	60 36 5	2880
325	Children under five who have had fever in the last 2 weeks		44	4010
Behavior: ORS, safe water, hygiene and sanitation				
401	Hand-washing with soap before feeding child		47	2880
402	Hand-washing with soap after cleaning child after he/she defecated		50	2880
403	Hand-washing with soap after defecation		52	2880
404	Toilet use at last defecation		89	2880
405	Disposal of (youngest) child's feces	Use toilet/ latrine Throw in toilet/latrine Other	19 76 5	2880
406	Ever drink water treated to kill germs		51	2880
407	Reported reasons for not treating water (among non-treaters)	Treatment not available Too expensive Water is safe Other	45 4 40 11	1393
408	How often do you consume treated water? (among treaters)	Never Sometimes Most of the time Always	52 13 18 21	1487
409	Treated water in last week		34	2880
410	Used *WaterGuard* in last week		14	2880
410	Method of treating water (among treaters)	Boiled *WaterGuard* Other chlorine product	29 41 29	1487
411*	Main method of water storage	20Lmetal bucket 14L metal bucket Plastic bucket Clay pots Jerry can Other	8 7 24 56 4 1	2646
412	Storage container covered		88	2880
413	Main method of drinking water retrieval	Poured out Scooped out	14 86	2880
414	Drinking water separated from other water		89	2880
415	Children's drinking water separated from other drinking water		26	2880
416	Children under five who have had diarrhea in last 2 weeks (of all CUFs)		20	4010
418	Fluid intake during diarrhea (among all CUFs who have had diarrhea in the last month)	More Same Less	46 35 19	983
419	Food intake during diarrhea (among all CUFs who have had diarrhea in the last month)	More Same Less	33 36 31	983
420	Breastfeeding continued during diarrhea (among those being breastfed)		71	931
421	Administration of ORS during diarrhea (among all CUFs who have had diarrhea in the last month)		58	983
422	Administration of *Thanzi* during diarrhea (among ORS users)		75	562
423*	Administration of home-made salt-sugar solution during diarrhea (among all CUFs who have had diarrhea in the last month)		30	780

Sociodemographics				
101	Sex	Male Female	17 83	2880
102	Mean Age	29 years		
103	Marital Status	Single Married/Cohabiting Widowed Divorced/Separated	6 82 6 6	2880
104	Ever been to school	Yes No	79 21	2880
105	Highest level of education	Tertiary Secondary Primary None	2 19 58 21	2880
106	Religious denomination	None Muslim Catholic CCAP Other Christian	1 14 28 21 35	2880
107	Religiosity	More religious Less religious As religious	35 57 8	2880
108	Main source of drinking water	Piped Community tap Well Borehole River/pond/lake	8 17 16 54 5	2880
109	Mean time from water source	16 minutes		2880
110	Type of toilet facility	Flush toilet Pit latrine VIP latrine None/bush	4 85 8 3	2880
111	Income indicators/possessions	Electricity Paraffin lamp Radio TV Refrigerator Bicycle Motorcycle Car/truck Mbaula	10 93 76 7 5 42 2 2 23	2880
112	Main material of roof	Metal sheets Tiles Thatch/grass	31 1 69	2880
Media Access				
201	Ever listen to the radio		96	2880
202	Frequency of listening	None Once 2-3 times 4-5 times More than 5 times	15 7 15 14 49	2880
203	Radio listening venue (among listeners)	Relative's house Friend's house At home Other	9 12 78	2763

204	Favorite radio station (among listeners)	MBC 1 MBC 2 Radio Maria Radio Islam Other	41 28 20 4 7	2763
205	Favorite radio show (among listeners)	Youth Alert! Mix Pakachere Tikuferanji Kuimba ku Malawi Makwaya Other/no favorite	2 3 7 3 4 81	2763
206	Ever watch TV		21	2880
207	Frequency of watching	None Once 2-3 times 4-5 times More than 5 times	87 4 3 1 6	2880
208	TV watching venue (among watchers)	Community hall School Relative's house Friend's house At home Other	14 7 29 13 33 18	594
209	Favorite TV show (among watchers)	Pakachere Tikuferanji Music Splash Super Story	4 16 52 6	594
210	Ever visited a video club		15	2880
211	Frequency of video club visits	None Once 2-3 times More than 3 times	85 3 2 1	2880
212	Ever read the newspaper		26	2880
213	Frequency of reading	None Once 2-3 times More than 3 times	82 10 6 3	2880
214	Favorite newspaper (among readers)	The Nation Daily Times Malawi News Weekend Nation Other	35 18 17 21 44	728
215	Exposure to other media	Billboards Posters Brochures Minibuses Wall signs Banners	52 54 14 55 79 16	2880
Opportunity – Malaria Prevention (1-4 scale)				
501-506 507-510 512-515 518-520	Availability, *Chitetezo* Nets Availability, *M'bwezera Chitetezo* Retreatment Kits Brand Attributes, *Chitetezo* Nets Brand Attribute, *M'bwezera Chitetezo* Retreatment Kits		2.76 2.93 2.93 3.29	2880
Ability – Malaria Prevention				
601-605	Self Efficacy, ITNs and Treatment (1-4 scale) Knowledge (out of a maximum possible 11)		3.64 8.70	2880

Motivation – Malaria Prevention (1-4 scale, except for Willingness to Pay)			
701-705	Beliefs, Malaria	2.64	2880
706-711	Outcome Expectations, ITNs	3.77	
712-720	Threat, Malaria	3.80	
747	Willingness to Pay, *M'bwezera Chitetezo* Retreatment Kits (Malawi Kwacha)	40	
729*	Willingness to Pay, *Chitetezo* Blue Nets (Malawi Kwacha)	283	418
733*	Willingness to Pay, *Chitetezo* Green Nets – Health Facility (Malawi Kwacha)	64	1539
Opportunity – Diarrheal Disease Control (1-4 scale)			
801-805	Availability, *Thanzi* ORS	3.54	2880
806-810	Availability, *WaterGuard*	3.11	
811-815	Brand Attributes, *Thanzi* ORS	3.59	
816-820	Brand Attributes, *WaterGuard*	3.47	
Ability – Diarrheal Disease Control (1-4 scale, except for Knowledge)			
901-904	Self Efficacy, ORS/ORT	3.80	2880
905-907	Self Efficacy, Water Treatment	3.54	
908-911	Self Efficacy, Hygiene and Sanitation	3.79	
912-922	Knowledge (out of a maximum possible 10)	9.43	
Motivation – Diarrheal Disease Control (1-4 scales, except for Willingness to Pay)			
1001-1004	Locus of Control, Diarrheal Disease	3.56	2880
1005-1007	Outcome Expectations, ORS/ORT	3.85	
1008-1010	Outcome Expectations, *WaterGuard*	3.68	
1011-1013	Outcome Expectations, Hygiene and Sanitation	3.84	
1014-1021	Threat, Diarrheal Disease	3.43	
1029	Willingness to Pay, *Thanzi* ORS (Malawi Kwacha)	13.59	
1037	Willingness to Pay, *WaterGuard* (Malawi Kwacha)	15.40	
Exposure – *Chitetezo* and *M'bwezera Chitetezo* A&P			
2005	Ever heard of *Chitetezo* Nets	95%	2880
2008	Can complete the phrase "Kupewa malungo… kuposa kuchiza"	79%	
2009	Ever heard of *M'bwezera Chitetezo* Retreatment Kits	92%	
2012	Can complete the phrase "Mankhwala onyikira… neti"	55%	
Sum: 2005 thru 2007	Mean total exposure score for *Chitetezo* out of a maximum possible 13 (intensity and frequency)	5.19	
Sum: 2009 thru 2011	Mean total exposure score for *M'bwezera Chitetezo* out of a maximum possible 11 (intensity and frequency)	4.41	
Sum: 2005 thru 2011	Mean total exposure score for *Chitetezo* and *M'bwezera Chitetezo* out of a maximum possible 24 (intensity and frequency)	9.60	
Exposure – *Thanzi* A&P			
2013	Ever heard of *Thanzi* ORS	96%	2880
2016	Can complete the phrase "Kubwezera… mphamvu mthupi"	67%	
Sum: 2013 thru 2015	Mean total exposure score out of a maximum possible 9 (intensity and frequency)	3.93	
Exposure – *WaterGuard* A&P			
2017	Ever heard of *WaterGuard*	90%	2880
2020	Can complete the phrase "Kuteteza madzi… kuchengeta moyo"	42%	
Sum: 2017 thru 2019	Mean total exposure score out of a maximum possible 9 (intensity and frequency)	3.49	
Exposure – Mobile Video Units			
2013	Ever seen an MVU show	14%	2880
Sum: 2001 thru 2004	Mean total exposure score out of a maximum possible 14 (frequency and duration)	0.87	

* Data collection errors resulted in over 5% missing cases with these items. For a detailed explanantion of how missing data was handled during the analysis, see Annex 7: Missing Data.

Changes in the indicators and values in the Monitoring Table will be tracked and assessed after subsequent survey rounds. Some of the most important indicators found in the table are summarized below.

62% of households with children under five own at least one net. The average number of nets owned by those households is 1.84. The most commonly cited reason for non-ownership is expense – this squares with the segmentation finding (Table 2) that non-owners are likely to be poorer.

Usage figures are significantly lower than for ownership. Only 41% of all nets owned were actually slept under the previous night, with only 20% of all children under five and 21% of pregnant women reportedly having used a net the previous night. This may be related to the fact that the survey was conducted in October-November 2005, at the end of an extended dry season when temperatures were high and mosquito biting densities low – heat and the absence of mosquitoes were the most commonly cited reasons for not sleeping under a net. Only 18% reported that their children under five sleep under a net all year round (compared with 71% for the rainy season).

Misuse appears common; with 36% reporting (unprompted) that they have seen bed nets being used for fishing (curtains and trapping birds are other, less common, 'alternative' uses).

Net treatment rates are high, with 96% of nets having ever been treated, 89% having been treated at the time of purchase and 83% having been treated in the last year. The senior female in the household is most likely to treat, and suggest treatment for the net.

97% of owned nets are those distributed by PSI – 77% are green (community or health-facility distributed, subsidized) and 20% are blue (commercial, cost-recovery). 78% of nets have been sourced from health-facilities and 16% from shops.

60% reported that at least one household member had suffered from malaria in the last year, with 44% of children under five reportedly having had a fever in the last two weeks.

Hand washing with soap at critical times (before feeding children, after defecation, after cleaning a child that has defecated) is practiced about half the time. 51% reported ever having treated their drinking water, with 34% having treated it the last week. *WaterGuard* had been used by 14% of households in the last week (it is the most common treatment method, used 41% of the time, with boiling and the use of other chlorine products each occurring in 29% of cases). Clay pots are used for drinking water storage in more than half the cases. Most people keep their drinking water covered

(88%) and segregated from water used for other purposes (89%). Children's drinking water was separated from other drinking water in 26% of cases.

20% of all children under five had reportedly suffered from diarrhea in the last two weeks. ORS was administered to 58% of the children under five who had suffered diarrhea in the last month, with *Thanzi* accounting for 75% of that use. Breastfeeding of infants suffering from diarrhea continued 71% of the time. Fluid intake was increased in 46% of the cases, maintained in 35% and reduced in 19%. Food intake was increased in 33% of the cases, maintained in 36% and reduced in 31%.

On average, respondents are Willing to Pay a maximum of MK40 for *M'bwezera Chitetezo*, MK14 for *Thanzi* ORS and MK15 for *WaterGuard*. Data collection errors resulted in most non-owners of nets not being asked about their Willingness to Pay for nets. Keeping the skewed nature of this sample in mind, the corresponding figures for commercial blue nets and health facility green nets, and community distribution green nets are MK283 and MK64 respectively.

Among the Media Access indicators, virtually the entire sample (96%) has ever listened to the radio, 21% has ever watched TV, and 26% has ever read the newspaper. Wall signs, billboards, minibuses and posters were other commonly cited media channels.

Awareness of PSI/Malawi brands is high, with 90% or more having heard of *Chitetezo*, *M'bwezera Chitetezo*, *Thanzi* and *WaterGuard*. Specific recall, measured by knowledge of the advertising slogan, is highest for *Chitetezo* (79%), and lowest for *WaterGuard* (42%). 14% have seen a PSI/Malawi mobile video unit (MVU) show.

SEGMENTATION TABLES AND ANALYSIS

As mentioned above, in addition to the tracking of key indicators over time, PSI's new research methodology also focuses on the segmentation of the target group into those that perform the desired behavior (the behavers), and those that do not (the non-behavers). As earlier explained, this segmentation allows us to isolate the OAM factors and population characteristics that differentiate the two groups and possibly determine behavior. OAM factors have also been adjusted to account for differences in population characteristics (age, marital status, education etc.).

A. Net Ownership

The first segmentation analysis identifies the differences between those who own nets and those who do not. Table 2 below includes those factors that differ between the two groups. Net owners perceive

higher levels of Availability for *Chitetezo* nets; have greater Self Efficacy for net use, more positive Outcome Expectations, and higher levels of Threat perception.

Interestingly, net owners score lower than non-owners on Brand Attributes for *Chitetezo*. This may be because they have had first-hand experience with the inconvenience of hanging/setting up nets and the heat and discomfort that is sometimes associated with sleeping under them.

Net owners are also older, more likely to be married, better educated, more religious, richer and have greater media access.

Table 2

Segmentation A: Net Ownership
Risk Group: Caregivers of children under five
Behavior: Own a bednet
N: 2876

	Own a net	Do not own	p
Opportunity			
Availability, Chitetezo Nets	2.90	2.51	.000
Brand Attributes, Chitetezo Nets	2.83	3.10	.000
Ability			
Self Efficacy, Net Use	3.79	3.39	.000
Motivation			
Outcome Expectations	3.85	3.63	.000
Threat	3.81	3.78	.000
Population Characteristics			
Age	29.47	29.10	.005
Married	83%	78%	.003
Ever been to school	83%	73%	.000
Secondary Education or higher	24%	15%	.000
Highly Religious	37%	32%	.010
Socio-Economic Status	5.05	4.81	.000
Media Access	5.62	5.25	.022

$p \leq .05$

B. Net Use

Table 3 below provides the net use segmentation results. Again, Availability, Self Efficacy and Threat appear as significant, with net users (those whose children under five slept under a net the previous night) perceiving greater Availability of *Chitetezo* nets, displaying greater Self Efficacy for net use, and perceiving higher levels of Threat than non-users.

We also see that net users are better educated, richer, have better media access and are more likely to be Christian (i.e. Muslims and animists are less likely to use nets).

Table 3

Segmentation E: ITN Use
Risk Group: Caregivers of children under five
Behavior: Child under five slept under a net the previous night
N=2876

	Slept under net	Did not sleep under net	p
Opportunity			
Availability, Chitetezo nets	2.96	2.71	.000
Ability			
Self Efficacy, Net Use	3.80	3.60	.000
Motivation			
Threat	3.82	3.80	.009
Population Characteristics			
Ever been to school	85%	78%	.000
Secondary Education or higher	29%	18%	.000
Christian	86%	84%	.019
Socio-Economic Status	5.05	4.94	.043
Media Access	5.82	5.40	.001

$p \leq .05$

C. Net Treatment

Table 4 below provides the net treatment segmentation results. Once again, Availability appears critical, with behavers (those who have treated their nets in the last 12 months) perceiving greater availability of both *Chitetezo* nets and *M'bwezera Chitetezo* retreatment kits. We also see that behavers are older, less likely to be Christian, more religious and have better access to media sources.

It is worth noting that Self Efficacy does not differentiate behavers from non-behavers in this case. This may be partly due to the fact that annual free retreatment campaigns render personal initiative less critical, with health workers assuming responsibility for many of the repeat net treatments.

Table 4

Segmentation F: Net Treatment
Risk Group: Caregivers of children under five who own a bednet
Behavior: Treated net in last 12 months
N=1711

	Treated Net	Not Treated	p
Opportunity			
Availability, Chitetezo Nets	2.90	2.96	.017
Availability, M'bwezera Chitetezo	3.13	3.06	.015
Population Characteristics			
Age	29.50	27.99	.009
Christian	83%	89%	.050
Media Access	6.15	4.52	.000

$p \leq .05$

D. ORS Use

Table 5 below identifies the differences between ORS users and non-users (those who administered ORS to their child under five during his/her last episode of diarrhea in the past month, and those who did not). The only OAM factor emerging as significant is Availability, with ORS users predictably perceiving greater *Thanzi* Availability than non-users. The lack of additional insight may be because of the relatively small sample (only those whose children have experienced diarrhea in the past month), combined with the high overall levels of ORS use (see Monitoring Table).

We do also see, however, that ORS users have higher socio-economic status and are more likely to be married.

Table 5

Segmentation G: ORS Use
Risk Group: (Caregivers of) children under five who have had diarrhea in the past four weeks
Behavior: Administered ORS during last diarrhea
N=791

	Used ORS	Did not use	p
Opportunity			
Availability, ORS	3.59	3.39	.000
Population Characteristics			
Married	85%	78%	.017
Socio-Economic Status	5.03	4.84	.028

$p \leq .05$

E. Water Treatment

Table 6 below identifies the differences between those who have treated their water in the last month (used *WaterGuard*, boiled or used another chlorine product), and those who have not. Again, we see that Self Efficacy matters. Behavers also perceive higher levels of *WaterGuard* Availability, and have greater Knowledge of diarrheal disease.

Non-behavers perceive greater Threat from diarrheal disease (a possible consequence of having their households consume unsafe water), and have more positive Outcome Expectations associated with hygiene (perhaps because they are more reliant on good hygiene to prevent diarrheal disease, since their children do not consume treated water).

Curiously, those who do not treat their water also appear to be Willing to Pay more for *WaterGuard*. This maybe related to the lower levels of perceived Availability among the non-behavers, i.e. demand for the product maybe outpacing its actual supply, with greater unmet demand equating with greater Willingness to Pay. This squares with the finding that non-users are also at higher risk with regard to

their water sources; non-users are less likely to have access to piped water, and live a greater distance away from their water sources. This suggests that PSI/Malawi needs to do a better job of targeting those at greatest risk.

We also see that behavers are less likely to be male than non-behavers, are more likely to be married, are better educated, are more likely to be Christian.

Table 6

Segmentation H: Water Treatment
Risk Group: Caregivers of children under five
Behavior: Treated water in the last week (boiled or used WaterGuard)
N: 2876

	Treated Water	Did Not Treat	p
Opportunity			
Availability, WaterGuard	3.23	3.04	.012
Ability			
Self Efficacy, Water Treatment	3.64	3.48	.001
Knowledge, Diarrheal Disease	9.55	9.38	.000
Motivation			
Outcome Expectations, Hygiene	3.76	3.88	.000
Threat, Diarrheal Disease	3.34	3.48	.000
Willingness to Pay, WaterGuard	14.11	16.06	.001
Population Characteristics			
Male	14%	18%	.000
Married	88%	79%	.000
Secondary Education or higher	27%	17%	.000
Christian	87%	83%	.000
Piped Water Source	31%	20%	.000
Time to Water Source	14 min	17 min	.003

$p \leq .05$

F. Hand Washing

Table 7 below identifies the differences between those who washed their hands with soap prior to last feeding their child under five, and those who did not. Behavers have greater Knowledge of diarrheal disease. Non-behavers perceive greater Threat from diarrheal disease. The findings for Self Efficacy and Outcome Expectations are the opposite of what one might expect, with non-behavers displaying greater Self Efficacy and more positive Outcome Expectations for hygiene, a correlation that is hard to explain.

Behavers are less likely to be male than non-behavers, are more likely to be married, are less religious, have higher socio-economic status, more access to piped water, and once again have greater media access.

Table 7

Segmentation I: Hand Washing
Risk Group: Caregivers of children under five
Behavior: Washed hands with soap before last feeding child
N: 2876

	Washed Hands	Did Not Wash	p
Ability			
Self Efficacy, Hygiene	3.78	3.80	.001
Knowledge, Diarrheal Disease	9.50	9.41	.000
Motivation			
Outcome Expectations, Hygiene	3.80	3.88	.001
Threat, Diarrheal Disease	3.30	3.55	.000
Population Characteristics			
Male	15%	18%	.007
Married	86%	78%	.000
Highly Religious	31%	39%	.018
Piped Water Source	26%	22%	.019
Socio-economic Status	5.01	4.92	.035
Media Access	5.96	5.07	.000

$p \leq .05$

EXPOSURE EVALUATION

Tables 8a-8e segment the population of caregivers by varying levels of exposure (none/low, medium and high) to PSI/Malawi activities. Levels of exposure are calculated by measuring intensity, frequency and duration of exposure. Intensity refers to the number of channels via which the respondent was reached, e.g. radio advertising, billboards, and posters. Frequency refers to the number of times in a given time period the respondent was exposed to a specific intervention, e.g. the number of times in the last week that the respondent has heard an advertisement for *Chitetezo* nets. Duration refers to the amount of time that the respondent spent being exposed to a specific intervention, e.g. did the respondent watch the complete MVU show, half of it, or less than half. The analysis is adjusted for population characteristics, ensuring that the comparisons are valid and bias for self-selection is mitigated (see Annex 6 for details on the exposure index).

The exposure results suggest that PSI/Malawi IEC and A&P have had some success influencing the behaviors of interest. Most OAM factors are also found to be positively correlated with exposure to PSI/Malawi interventions.

As relates to the various behaviors promoted by PSI/Malawi, a significantly higher percentage of respondents with medium or high exposure to *Chitetezo* A&P than of those with low exposure to

Chitetezo A&P owned as well as had treated their nets in the last 12 months. The impact of *Chitetezo* A&P on actual net use appeared to be strongest at medium levels of exposure (23%).

Exposure to *M'bwezera Chitetezo* A&P is positively correlated with both net ownership and use, but not with treatment (not shown in Table 8b). The impact of *M'bwezera Chitetezo* A&P on net use was also strongest at medium levels of exposure (22% used) than higher levels of exposure (19% used).

Higher levels of exposure to *Thanzi* A&P are not positively correlated with ORS use, although it is correlated with higher perceived Availability. Higher levels of exposure to *WaterGuard* A&P are positively correlated with both water treatment and hand washing.

As relates to impact on OAM factors related to the behaviors promoted, higher levels of exposure to PSI/Malawi IEC and/or A & P was found to have a positive impact on the following: perceived availability of nets, perceived availability of ORS, perceived availability of *WaterGuard*, brand attributes for *Chitetezo* nets, brand attributes for *Thanzi* ORS, self-efficacy for using ORS, self efficacy for using *WaterGuard,* self efficacy for treating of nets, self efficacy for following recommended hygienic and sanitation practices, knowledge about diarrial disease, knowledge about malaria; outcome expectations for *WaterGuard,* and outcome expectations for net treatment.

Key:
Bold – Significantly different than low/no exposure (reference category)
Italics – Significantly different than medium exposure (previous category)
Bold and italics – Significantly different than both low/no and medium exposure (both reference and previous category)

Table 8a: Exposure to *Chitetezo* Nets A&P

	None/Low	Medium	High
Behavior			
Own a net	56%	**65%**	**65%**
Child under five slept under a net the previous night	18%	**23%**	*18%*
Treated net in the last 12 months	76%	**82%**	**83%**
Opportunity			
Availability, *M'bwezera Chitetezo*	2.81	**2.96**	**3.01**
Brand Attributes, *Chitetezo* Nets	3.94	2.88	*2.99*
Brand Attributes, *M'bwezera Chitetezo*	3.43	**3.24**	**3.23**
Ability			
Self Efficacy, Nets and Treatment	3.56	**3.71**	***3.63***
Knowledge, Malaria	8.59	**8.75**	**8.77**
Motivation			
Outcome Expectations, Nets and Treatment	3.77	**3.82**	***3.70***
Threat, Malaria	3.83	3.83	***3.74***

Table 8b: Exposure to *M'bwezera Chitetezo* A&P

	None/Low	Medium	High
Behavior			
Own a net	49%	**64%**	**66%**
Child under five slept under a net the previous night	14%	**22%**	***19%***
Opportunity			
Availability, *Chitetezo* Nets	2.63	**2.78**	**2.79**
Availability, *M'bwezera Chitetezo*	2.72	**2.94**	***3.03***
Ability			
Self Efficacy, Nets and Treatment	3.42	**3.70**	**3.66**
Knowledge, Malaria	8.53	**8.73**	**8.79**
Motivation			
Beliefs, Malaria	2.55	**2.70**	*2.61*
Outcome Expectations, Nets and Treatment	3.69	**3.83**	*3.72*
Threat, Malaria	3.82	3.83	***3.76***

Table 8c: Exposure to *Thanzi* ORS A&P

	None/Low	Medium	High
Opportunity			
Availability, ORS	3.42	**3.54**	***3.62***
Availability, *WaterGuard*	3.03	**3.15**	*3.12*
Brand Attributes, *WaterGuard*	3.41	**3.55**	*3.43*
Ability			
Self Efficacy, ORS	3.78	**3.83**	3.78
Self Efficacy, *WaterGuard*	3.47	**3.61**	*3.50*
Self Efficacy, Hygiene	3.78	**3.81**	*3.77*
Knowledge, Diarrheal Disease	9.21	**9.47**	**9.55**
Motivation			
Outcome Expectations, ORS	3.84	**3.89**	*3.81*
Outcome Expectations, *WaterGuard*	3.70	3.71	***3.63***
Outcome Expectations, Hygiene	3.87	3.86	***3.80***
Threat, Diarrheal Disease	3.50	**3.44**	***3.39***

Table 8d: Exposure to *WaterGuard* A&P

	None/Low	Medium	High
Behavior			
Treated water in the last week	18%	**31%**	***46%***
Washed hands with soap before last feeding child under five	40%	38%	***65%***
Opportunity			
Availability, ORS	3.38	**3.52**	***3.63***
Availability, *WaterGuard*	2.76	**3.09**	***3.26***
Brand Attributes, *Thanzi* ORS	3.50	**3.60**	**3.60**
Brand Attributes, *WaterGuard*	2.96	**3.50**	***3.59***
Ability			
Self Efficacy, ORS	3.71	**3.82**	***3.79***
Self Efficacy, *WaterGuard*	3.13	**3.55**	***3.66***
Self Efficacy, Hygiene	3.73	3.80	3.79
Knowledge, Diarrheal Disease	9.13	**9.43**	***9.56***

Motivation			
Outcome Expectations, ORS	3.81	**3.87**	*3.82*
Outcome Expectations, *WaterGuard*	3.34	**3.70**	***3.75***
Outcome Expectations, Hygiene	3.90	**3.84**	***3.81***
Willingness to Pay, *WaterGuard*	16.59	15.55	***14.68***

Table 8e: Exposure to Mobile Video Units

	Not Exposed	Exposed
Behavior		
Own a net	60%	**74%**
Treated net in the last 12 months	80%	**87%**
Opportunity, Malaria Prevention		
Availability, *Chitetezo* Nets	2.72	**2.97**
Availability, *M'bwezera Chitetezo*	2.9	**3.15**
Brand Attributes, *Chitetezo* Nets	2.95	**2.85**
Brand Attributes, *M'bwezera Chitetezo*	3.31	**3.19**
Ability, Malaria Prevention		
Self Efficacy, Nets and Treatment	3.63	**3.73**
Knowledge, Malaria	8.67	**8.95**
Motivation, Malaria Prevention		
Outcome Expectations, Nets and Treatment	3.76	**3.84**
Opportunity, Diarrheal Disease Control		
Availability, ORS	3.52	**3.66**
Availability, *WaterGuard*	3.06	**3.41**
Brand Attributes, ORS	3.58	**3.66**
Brand Attributes, *WaterGuard*	3.43	**3.69**
Ability, Diarrheal Disease Control		
Self Efficacy, *WaterGuard*	3.51	**3.71**
Self Efficacy, Hygiene	3.78	**3.85**
Motivation, Diarrheal Disease Control		
Outcome Expectations, *WaterGuard*	3.67	**3.76**

PROGRAMMATIC RECOMMENDATIONS

The most significant programmatic conclusion that PSI/Malawi can draw from this study is that perceived availability is arguably the factor most critical to facilitating the use of key child health products; whether nets, retreatment kits, ORS, or POU water treatment. Perceived availability was found to be associated with use of all products examined. In addition to Availability, Self Efficacy is another factor that consistently appears as significant. Making *Chitetezo* nets, *M'bwezera Chitetezo* retreatment kits and *WaterGuard* more available will result in more widespread use of these products, especially if coupled with IEC and A&P that gives caregivers confidence in their ability to use them consistently and keep their children healthy.

Media Access is consistently positively correlated with product use, and therefore, as a general recommendation, PSI/Malawi should continue its use of radio and other mass media channels to effect behavior change among those with access to mass media. It is also important to continue developing means of outreach to those households that have more limited access to these media sources.

A – Net Ownership Exposure to *Chitetezo* and *M'bwezera Chitetezo* A&P and to MVU shows appears to have a positive impact on this behavior. In order to further increase net ownership, the following actions are recommended:

1. In addition to making nets more available to the target population, ensure that A&P efforts enhance perceived Availability by informing consumers where and how they can obtain the product.
2. Focus A&P and IEC efforts on enhancing Self Efficacy for net use, i.e. give caregivers confidence in their ability to: protect their children from malaria, save up the money to buy a net, install a net properly, and ensure that their children sleep under a net every night (regardless of season, weather or mosquito densities).
3. Aim to increase the perception of Threat among caregivers by emphasizing both susceptibility to malaria (the extent of the problem, its year-round nature, the vulnerability of children under five and pregnant women), as well as its severity (that it can result in death, and can cause serious financial losses to the household).
4. Emphasize the positive Outcomes associated with net use, i.e. that net use decreases the likelihood of children getting malaria, that nets are highly effective in preventing mosquito bites and ensuring a good night's sleep, that avoiding malaria will help the household save money, and that treated nets are more effective than untreated ones.
5. Address concerns about the inconvenience of hanging and removing nets by positioning them as easy to use and providing advice on the simplest methods of set up and storage.
6. Target poorer, less-educated caregivers and single mothers with lower levels of access to conventional media channels.

B – Net Use It is unclear the extent to which exposure to *Chitetezo* and *M'bwezera Chitetezo* A&P appears to have a positive impact on this behavior. In order to increase consistent net use, the following actions are recommended:

1. In addition to making nets more available to the target population, ensure that A&P efforts enhance perceived Availability by informing consumers where and how they can obtain the product.

2. Focus A&P and IEC efforts on enhancing Self Efficacy for net use, i.e. give caregivers confidence in their ability to: protect their children from malaria, save up the money to buy a net, install a net properly, and ensure that their children sleep under a net every night (regardless of season, weather or mosquito densities).
3. Aim to increase the perception of Threat among caregivers by emphasizing both susceptibility to malaria (the extent of the problem, its year-round nature, the vulnerability of children under five and pregnant women), as well as its severity (that it can result in death, and can cause serious financial losses to the household).
4. Target poorer, less-educated caregivers with lower levels of media access.

C – Net Treatment Exposure to *Chitetezo* A&P and to MVU shows appears to have a positive impact on this behavior. In order to further increase net treatment rates, the following actions are recommended:

1. In addition to making nets and retreatment kits more available to the target population, ensure that A&P efforts enhance perceived Availability by informing consumers where and how they can obtain the products.
2. Continue to support the MOH in promoting and conducting annual free retreatment campaigns.
3. Target younger caregivers with lower levels of media access.

D – ORS Use Exposure to *Thanzi* A&P does not appear to have had a positive impact on this behavior (A&P activities have been extremely limited due to funding constraints). Rates of ORS use are relatively high, and in order to further increase them, the following actions are recommended:

1. In addition to making *Thanzi* ORS more available to the target population, ensure that A&P efforts enhance perceived Availability by informing consumers where and how they can obtain the product.
2. Target poorer households, particularly those headed by single mothers.

E – Water Treatment Exposure to *WaterGuard* A&P appears to have a positive impact on this behavior. To further increase rates of point-of-use water treatment, the following actions are recommended:

1. Increase perceived availability of *WaterGuard* by actually increasing availability and/or advertisement about places where it can be found. Also ensure that A&P efforts enhance perceived Availability by informing consumers where and how they can obtain the product.

2. Focus on A&P and IEC efforts on enhancing Self Efficacy for water treatment, i.e. give caregivers confidence in their ability to: follow the *WaterGuard* instructions, teach others to correctly use the product, get their children to drink treated water, and safely store their drinking water.
3. Increase Knowledge of diarrheal disease, its causes and prevention.
5. Promote the lower perceived Threat (the reduction of negative consequences) and 'peace of mind' which results from ensuring a safe drinking water supply for their children.
6. Target less educated caregivers, particularly single mothers.
7. Target households that are without access to piped water, and households that live at greater distances from their water sources.

F – Hand Washing. Exposure to *WaterGuard* A&P appears to have a positive impact on this behavior. To further increase rates of hand washing with soap at critical times, the following actions are recommended:

1. Increase Knowledge of diarrheal disease, its causes and prevention.
2. Promote the lower perceived Threat (the reduction of negative consequences) and 'peace of mind' which results from ensuring a safe drinking water supply for their children.
3. Target poorer households without access to piped water, that have lower levels of media access, particularly single mothers.

ANNEX 1: POPULATION CHARACTERISTICS

No.	Item	Response	%	N
101	Sex	Male Female	17 83	2880
102	Mean Age	29 years		
103	Marital Status	Single Married/Cohabiting Widowed Divorced/Separated	6 82 6 6	2880
104	Ever been to school	Yes No	79 21	2880
105	Highest level of education	Tertiary Secondary Primary None	2 19 58 21	2880
106	Religious denomination	None Muslim Catholic CCAP Other Christian	1 14 28 21 35	2880
107	Religiosity	More religious Less religious As religious	35 57 8	2880
108	Main source of drinking water	Piped Community tap Well Borehole River/pond/lake	8 17 16 54 5	2880
109	Mean distance from water source	16 minutes		
110	Type of toilet facility	Flush toilet Pit latrine VIP latrine None/bush	4 85 8 3	2880
111	Income indicators/possessions	Electricity Paraffin lamp Radio TV Refrigerator Bicycle Motorcycle Car/truck Mbaula	10 93 76 7 5 42 2 2 23	2880
112	Main material of roof	Metal sheets Tiles Thatch/grass	31 1 69	2880

ANNEX 2: METHODOLOGY

Sample Characteristics The smallest sample size that could be used in order to display the expected changes in proportions of interest was 2,459 respondents. Since areas of extremely low population density (such as national parks) were not be included in the sample, and to account for the possibility of further losses due logistical/access problems, an approximately 10 percent larger sample of 2,725 was sought. 2,880 respondents were finally interviewed (1,538 males and 1,342 females).

A total of 129 Traditional Authorities (TAs) was sampled, employing 'probability proportional to size' (PPS) sampling scheme, in 28 of the country's 29 districts (Likoma Island excluded for logistical reasons). One or two Enumeration Areas (EAs) were sampled in each selected TA, depending on the number of respondents to be drawn from that TA.

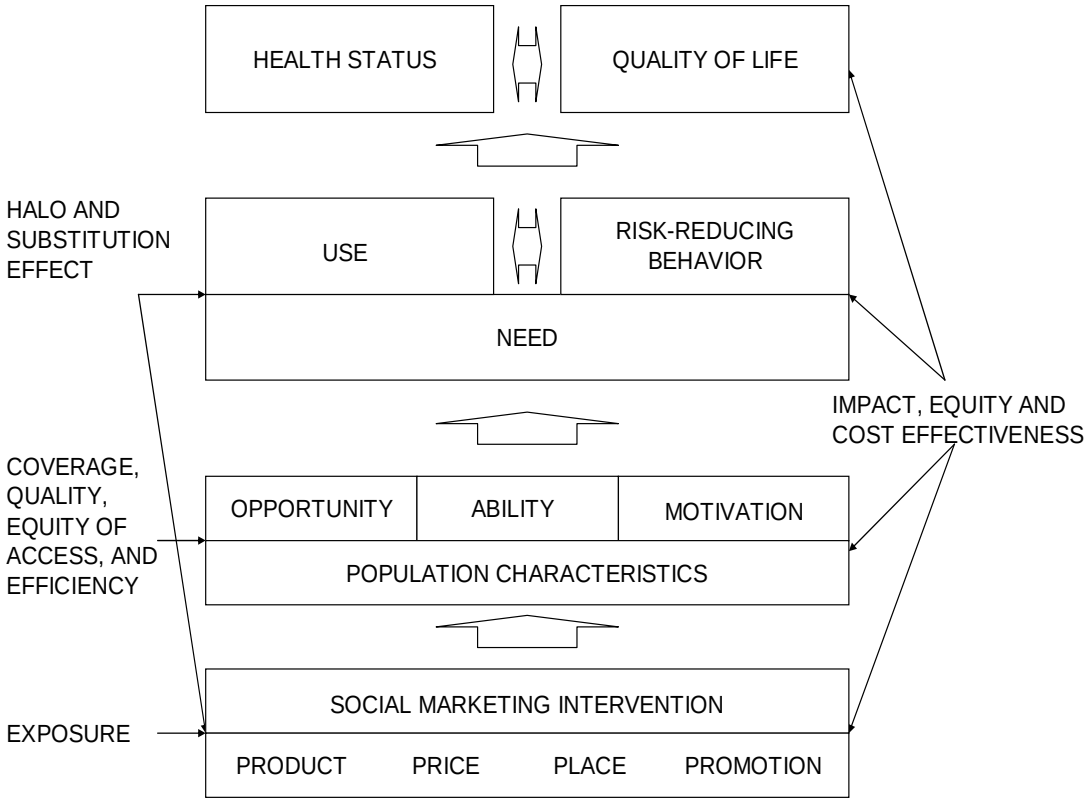
Data Collection Procedure The data collection teams first listed all households in each selected EA. This listing identified those households with children under five. Households qualifying for the survey were chosen using a systematic selection method applying a fixed interval. In each case, the primary caregiver was selected as the respondent, and permission to conduct the interview was sought from the individual. A maximum of seven and a minimum of four interviews were conducted each day.

Survey Instrument(s) The principle instrument of the survey was an English/ Chichewa/ Tumbuka questionnaire developed jointly by PSI/Malawi programmatic and research staff, with guidance from the PSI Research Division. The questionnaire was pre-tested with 200 respondents, in order to gauge response and check the OAM scales for reliability (see Annex 5). Each interview took between 45 and 90 minutes to conduct. The questionnaires were administered by 27 university undergraduates hired by PSI/Malawi and given three days of training conducted by the Research Department.

Analytic Technique The data was double-entered and validated using Epi Info 6 and then exported to SPSS 13.0 for analysis

ANNEX 3: PERFORMANCE FRAMEWORK FOR SOCIAL MARKETING (PERForM)

(Graphical Presentation)



ANNEX 4: PERFORMANCE FRAMEWORK FOR SOCIAL MARKETING (PERForM)

(Opportunity, Ability and Motivational Factors)

The theoretical framework used to guide this monitoring and evaluation study is PSI's PERForM (Performance Framework for Social Marketing) (Chapman and Patel, 2004). The PERForM framework has been developed through the review of the most important theories of behavior change in the literature including the Andersen's model of utilization of health services (Andersen, 1995), the health belief model (Rosenstock, 1974), the theory of reasoned action (Fishben and Ajzen, 1975), the social learning theory (Bandura, 1977), and the concept of locus of control (Rotter, 1966). The framework analyzes the major determinants of health behaviors by categorizing them in terms of opportunity, ability and motivational factors. According to PERForM, these three summary constructs proximally explain a person's use of preventive/curative health products and services and/or risk-reducing behavior (MacInnis, Moorman, & Jaworski, 1991; Moorman & Matulich, 1993; Rothschild, 1999; Hallahan, 2000; Wiggins, 2004; Binney, Hall, & Shaw, 2004).

Opportunity refers to institutional or structural factors that influence an individual's chance to perform a promoted behavior. They include availability, brand appeal, brand attributes, quality of care, and social norm. Availability is the extent to which the promoted product or service is found in a pre-defined given area. Brand appeal is the extent to which the characteristics of the prompted product or service's branding (i.e., name, term, sign, design, layout, slogan, etc.) distinguish the product or service from its competitors (McDowell & Sutherland, 2000). Brand attributes is the extent to which the physical components of a brand are practical to use. Quality of care is the extent to which the promoted service is of high value. Social norm is the behavioral standards, which exist in the community for an individual to follow.

Ability is an individual's skills or proficiencies needed to perform a promoted behavior. Ability factors refer to knowledge, self-efficacy, and social support. Knowledge is true facts accumulated through learning about objects, actions, and events (Clarke, 1992). Self-efficacy is the belief that an individual is able to perform a promoted behavior effectively or successfully (Bandura, 1977). Social support is the assistance that an individual gives/receives. Emotional support is activities that an individual does to make others feel loved and cared. Instrumental support is tangible help that an individual receives/provides. Informational support is help that an individual gets/offers through information (Seeman & Berkman, 1988).

Motivation is an individual's arousal or desire to perform a promoted behavior. Motivational factors include attitude, belief, intention, locus of control, outcome expectation, subjective norm, threat (risk), and willingness to pay. Attitude is an evaluation or assessment of an object (Eagly & Chaiken, 1993). Belief is a perception about an object, which may or may not be true. Intention is an individual's plan to perform the promoted behavior (Fishbein & Ajzen, 1975). Locus of control is the external or internal site of control in an individual's life. An external locus of control suggests that an individual's health is under the control of powerful others or is determined by fate, luck, or chance. An internal locus of control suggests that an individual's health is directly controlled by him/herself (Rotter, 1966). Outcome expectation is the belief that an object or action is effective in fulfilling its purpose (Bandura, 1977). Subjective norm is perceived pressures to comply with what an individual believes others in the social group believe about the promoted behavior (Fishbein & Ajzen, 1975). Threat (risk) is a perceived dangerous or harmful event that exists in an individual's surroundings. Threat (risk) is comprised of two perceived dimensions: severity and susceptibility. Willingness to pay is an individual's intention to pay for a promoted product or service.

ANNEX 5: RELIABILITY ANALYSIS

SCALE	ITEMS	ALPHA
Opportunity		
Availability, *Chitetezo* Nets	501-506	.776
Availability, *M'bwezera Chitetezo*	507-510	.811
Brand Attributes, *Chitetezo* Nets	512-515	.738
Brand Attributes, *M'bwezera Chitetezo*	518-520	.670
Ability		
Self-efficacy, ITNs and Treatment	601-605	.899
Motivation		
Beliefs, Malaria	701-705	.788
Outcome Expectations, ITNs	706-711	.902
Threat, Malaria	712, 713, 715, 717-720	.764
Opportunity		
Availability, *Thanzi*	801-805	.805
Availability, *WaterGuard*	806-810	.846
Brand Attributes, *Thanzi*	811-815	.790
Brand Attributes, *WaterGuard*	816, 817, 819, 820	.903
Ability		
Self-efficacy, ORS/ORT	901-904	.850
Self-efficacy, *WaterGuard*	905-907	.892
Self-efficacy, Hygiene/Sanitation	908-911	.840
Motivation		
Locus of Control, Diarrheal Disease	1001-1004	.805
Outcome Expectations, ORS/ORT	1005-1007	.862
Outcome Expectations, *WaterGuard*	1008-1010	.764
Outcome Expectations, Hygiene/Sanitation	1011-1013	.848
Threat, Diarrheal Disease	1014, 1016-1021	.616

ANNEX 6: EXPOSURE

Below is an example of an exposure index. If a respondent has been exposed to an intervention through all available channels (intensity), spent the maximum amount of time being exposed (duration), and is exposed most frequently (frequency), then he/she will be awarded the maximum possible exposure score of 15. Scores in the bottom third (approximately) are categorized as 'low/no exposure', those in the middle third as 'medium exposure', and those in the top third as 'high exposure'. For example, if approximately one-third of respondents score between 0–4, one-third score between 5–8, and one-third score between 9–15; then these are the scores that correspond with the 'no/low', 'medium' and 'high' categories respectively. It should be noted that for certain types of communications or activities, not all three exposure measures apply (e.g. duration does not apply as a measure of exposure to a poster or billboard).

Exposure: Youth Alert!			
Q705	Have you ever heard of Youth Alert!?	Yes 1 No 0	
Q706	Have you ever heard the Youth Alert! Mix radio program? *(intensity)*	Yes 1 No 0	**→Q709**
Q707	How often do you listen to Youth Alert! Mix in a month? *(frequency)*	Every week 4 2-3 times a month 3 Once a month 2 Once every two or more months 1	
Q708	When you listen to Youth Alert! Mix do you listen to the entire or part of the program? *(duration)*	Entire 1 Part 0	
Q709	Have you ever attended any Youth Alert! Schools Presentation? *(intensity)*	Yes 1 No 0	
Q710	Have you ever seen the Youth Alert! Magazine? *(intensity)*	Yes 1 No 0	**→Q712**
Q711	Have you read the entire or part of theYouth Alert! Magazine? *(duration)*	Entire 1 Part 0	
Q712	Are you a member of a Youth Alert! Listeners Club? *(intensity)*	Yes 1 No 0	**→Q714**
Q713	How often have you attended Youth Alert! Listeners Club activities in the last month? *(frequency)*	None 0 Once 1 Twice 2 Three times 3 Four times or more 4	
		Total the score from Q705-Q713 (out of a maximum possible 15)	**[_____]**
Q714	Can you finish the phrase for me beginning "Youth Alert! Youth Alert!…"? *(specific recall)*	Yes, "My Life, My Future" 1 No 0	

ANNEX 7: MISSING DATA

The table below provides information on the percentage of cases missing from each item in the dataset. The Ns represent the risk definition, or the number of cases/respondents for whom the item was relevant, and from whom a response was required.

In the monitoring table, valid percentages were reported for all items. With items where less than 5% of cases were missing, the Ns in the monitoring table correspond with the risk definition (the Ns in this table). With items where more than 5% of cases were missing, the Ns in the monitoring table represent the actual number of respondents who replied to the statement or question.

With the OAM and exposure items, missing cases were replaced with the mean scores for that scale (calculated across the entire sample).

No.	Item	Response	% Missing	N
Behavior: Malaria Prevention				
301	Mosquito net ownership (at least one net in the household)		0.1	2880
315a	Children under five who slept under an ITN the previous night		0.1	4010
315b	Pregnant women who slept under an ITN the previous night			
302	Reported reasons for non-ownership		0.0	1093
303	Mean number of nets (in net-owning households)		0.1	1783
304	Color of nets (of all nets owned)		0.2	3004
305	Received a treatment kit along with the net		0.7	3004
306	Net ever been treated		0.4	3004
307	Net treated immediately after purchase		2.6	3004
309	Net treated in the last 12 months		2.6	3004
310	Treated by		1.3	3004
311	Treatment suggested by		1.4	3004
312	Net ever washed		0.2	3004
313	Nets slept under last night (of all nets owned)		0.7	3004
314	Reported reasons for not sleeping under a net (among owners)		0.0	1165
316	Source of nets		5.0	3004
317	How long does it take for a net to wear out? (among owners)		0.8	1783
318	How often do you sleep under your net? (among owners)		1.1	1783
319	How often do your children sleep under a net? (among owners)		0.8	1783
320	What times of year do you sleep under a net? (among owners)		1.1	1783
321	What times of year do your children sleep under nets? (among owners)		0.8	1783
322	Other uses of mosquito nets observed and reported by respondents		0.0	2880
323	Ever bought a net and then sold it to someone else (among owners)		0.8	1783
324	Has anyone in your home suffered from malaria in the last year?		3.8	2880
325	Children under five who have had fever in the last 2 weeks		1.6	4010
Behavior: ORS, safe water, hygiene and sanitation				
401	Hand-washing with soap before feeding child		0.7	2880
402	Hand-washing with soap after cleaning child after he/she defecated		0.6	2880
403	Hand-washing with soap after defecation		0.6	2880
404	Toilet use at last defecation		2.6	2880
405	Disposal of (youngest) child's feces		1.1	2880
406	Ever drink water treated to kill germs		0.7	2880

407	Reported reasons for not treating water (among non-treaters)		0.0	1393
408	How often do you consume treated water? (among treaters)		0.0	1487
409	Treated water in last 2 weeks		2.4	2880
410	Method of treating water (among treaters)		1.9	1487
411	*Main method of water storage*		*8.1*	*2880*
412	Storage container covered		4.1	2880
413	Main method of drinking water retrieval		2.4	2880
414	Drinking water separated from other water		1.9	2880
415	Children's drinking water separated from other drinking water		2.8	2880
416	Children under five who have had diarrhea in last 2 weeks (of all CUFs)		2.3	4010
418	Fluid intake during diarrhea (among all CUFs who have had diarrhea in the last month)		4.3	983
419	Food intake during diarrhea (among all CUFs who have had diarrhea in the last month)		4.4	983
420	Breastfeeding continued during diarrhea (among those being breastfed)		0.0	931
421	Administration of ORS during diarrhea (among all CUFs who have had diarrhea in the last month)		3.5	983
422	Administration of *Thanzi* during diarrhea (among ORS users)		1.9	562
423	*Administration of home-made salt-sugar solution during diarrhea (among all CUFs who have had diarrhea in the last month)*		*9.9*	*983*
Sociodemographics				
101	Sex		0.2	2880
102	Mean Age		0.0	2880
103	Marital Status		0.5	2880
104	Ever been to school		0.6	2880
105	Highest level of education		0.8	2880
106	Religious denomination		0.5	2880
107	Religiosity		3.0	2880
108	Main source of drinking water		0.6	2880
109	Mean time from water source		0.7	2880
110	Type of toilet facility		0.5	2880
111	Income indicators/possessions		0.9	2880
112	Main material of roof		0.8	2880
Media Access				
201	Ever listen to the radio		0.3	2880
202	Frequency of listening		1.0	2880
203	Radio listening venue (among listeners)		1.5	2763
204	Favorite radio station (among listeners)		0.5	2763
205	Favorite radio show (among listeners)		1.1	2763
206	Ever watch TV		0.6	2880
207	Frequency of watching		0.5	2880
208	TV watching venue (among watchers)		0.6	594
209	Favorite TV show (among watchers)		1.3	594
210	Ever visited a video club		1.3	2880
211	Frequency of video club visits		1.1	2880
212	Ever read the newspaper		1.1	2880
213	Frequency of reading		2.0	2880
214	Favorite newspaper (among readers)		1.3	728
215	Exposure to other media	Billboards	1.4	2880
		Posters	1.3	
		Brochures	2.0	
		Minibuses	1.7	
		Wall Signs	1.3	
		Banners	2.4	
Opportunity – Malaria Prevention (1-4 scale)				
501-506	Availability, *Chitetezo* Nets		1.3	2880
507-510	Availability, *M'bwezera Chitetezo* Retreatment Kits		0.8	
512-515	Brand Attributes, *Chitetezo* Nets		1.3	
518-520	Brand Attribute, *M'bwezera Chitetezo* Retreatment Kits		1.1	

Ability – Malaria Prevention			
601-605	Self Efficacy, ITNs and Treatment (1-4 scale)	1.3	2880
606-615	Knowledge (out of a maximum possible 11)	0.0	
Motivation – Malaria Prevention (1-4 scale, except for Willingness to Pay)			
701-705	Beliefs, Malaria	1.6	2880
706-711	Outcome Expectations, ITNs	1.4	
712-720	Threat, Malaria	2.2	
729	*Willingness to Pay, Chitetezo Blue Nets (Malawi Kwacha)*	*85.0*	
733	*Willingness to Pay, Chitetezo Green Nets*	*33.0*	
747	Willingness to Pay, *M'bwezera Chitetezo* Retreatment Kits (Malawi Kwacha)	2.8	
Opportunity – Diarrheal Disease Control (1-4 scale)			
801-805	Availability, *Thanzi* ORS	1.3	2880
806-810	Availability, *WaterGuard*	1.0	
811-815	Brand Attributes, *Thanzi* ORS	1.1	
816-820	Brand Attributes, *WaterGuard*	0.7	
Ability – Diarrheal Disease Control (1-4 scale, except for Knowledge)			
901-904	Self Efficacy, ORS/ORT	0.8	2880
905-907	Self Efficacy, Water Treatment	0.6	
908-911	Self Efficacy, Hygiene and Sanitation	1.0	
912-922	Knowledge (out of a maximum possible 11)	0.0	
Motivation – Diarrheal Disease Control (1-4 scales, except for Willingness to Pay)			
1001-1004	Locus of Control, Diarrheal Disease	1.0	2880
1005-1007	Outcome Expectations, ORS/ORT	0.8	
1008-1010	Outcome Expectations, *WaterGuard*	0.8	
1011-1013	Outcome Expectations, Hygiene and Sanitation	1.3	
1014-1021	Threat, Diarrheal Disease	4.8	
1029	Willingness to Pay, *Thanzi* ORS (Malawi Kwacha)	2.7	
1037	Willingness to Pay, *WaterGuard* (Malawi Kwacha)	1.8	
Exposure – *Chitetezo* and *M'bwezera Chitetezo* A&P			
2005	Ever heard of *Chitetezo* Nets	0.0	2880
2008	Can complete the phrase "Kupewa malungo… kuposa kuchiza"	1.6	
2009	Ever heard of *M'bwezera Chitetezo* Retreatment Kits	0.0	
2012	Can complete the phrase "Mankhwala onyikira… neti"	1.0	
Exposure – *Thanzi* A&P			
2013	Ever heard of *Thanzi* ORS	0.0	2880
2016	Can complete the phrase "Kubwezera… mphamvu mthupi"	1.5	
Exposure – *WaterGuard* A&P			
2017	Ever heard of *WaterGuard*	0.0	2880
2020	Can complete the phrase "Kuteteza madzi… kuchengeta moyo"	1.7	
Exposure – Mobile Video Units			
2013	Ever seen an MVU show	0.0	2880

ANNEX 8: REFERENCES

1. *Youth Alert!* Peer Education Baseline Study; PSI Social Marketing Research Series; PSI/Malawi, Blantyre, Malawi; 2005

2. The Dashboard: A Tool for Social Marketing Decision Making; PSI Research Division, Washington, DC, USA; 2005

3. PSI Behavior Change Framework "Bubbles": Proposed Revision; PSI Research Division, Washington, DC