

FROM THEORY TO PRACTICE: THE ENVISIONING, DEVELOPMENT,  
IMPLEMENTATION, AND EVALUATION OF A  
UNIVERSITY EMPLOYEE WELLNESS  
PROGRAM

by

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# **I- FROM THEORY TO PRACTICE: THE GENESIS OF A HEALTH BEHAVIOR CHANGE THEORY-BASED EMPLOYEE WELLNESS PROGRAM AT A LARGE UNIVERSITY**

Health-related lifestyle behaviors, such as poor diet and low physical activity, impact the quality of life of US workers, while at the same time strain the bottom lines of American businesses (Healthy Workforce 2010). Employees engaging in unhealthy behaviors over time risk depression, unmanaged stress, obesity and related chronic health conditions, such as cardiopulmonary disease, diabetes, and osteoarthritis (U.S. Department of Health and Human Services 2002). This decline in employee health is of grave concern to businesses because it is associated with decreased productivity and increased health care costs (Mattke, Hangsheng, Caloyeras, Huang, Van Busum, Khodyakov, & Shier, 2013). Although this scenario is bleak, employee wellness programs (EWPs) have potential to play a significant role in (Abraham, Feldman, Nyman, & Barleen, 2011; Hart, 2013; Hill-Mey et al., 2015; Jenkins et al., 2014; *The Willis Health and Productivity Survey Report*, 2015) instigating and supporting sustainable changes in employees' health behaviors, reducing the incidence of serious medical conditions, and ultimately, mitigating the steady rise in health care costs and improving productivity.

While the components of EWPs vary, most include several features, such as wellness screening to identify health risks, primary prevention activities to promote healthy lifestyle behaviors, and secondary prevention activities to manage disease (Mattke et al., 2013). At a minimum, wellness screening involves health risk assessment through administration of questionnaires on health-related behaviors and risk factors. More extensive screening may include assessment of various biometric data such as blood pressure, serum cholesterol, and body size and composition (Mattke et al., 2013). Primary prevention strategies typically encourage

physical activity through fitness classes, gym membership discounts, and/or walking programs. Strategies may also address smoking cessation, stress management, healthy eating, weight management, and drug and alcohol abuse through educational programs, support groups, health behavior change coaching, and/or telephonic counseling (Mattke et al., 2013). Secondary prevention strategies provide another layer of intervention to help employees manage pre-existing chronic diseases (Mattke et al., 2013). While all levels of intervention are important to the effectiveness of an EWP, strategic investments in wellness screenings and primary prevention to promote health behavior change appear to be the most effective at maintaining a healthy and productive workforce while attenuating the rate of rising health care costs (Edington & Musich, 2004; Healthy Workforce 2010).

There are many ways to assess the efficacy of an EWP. Historically, the preferred method has been to measure financial metrics related to employee health such as health care costs, return on investment (ROI), incidences of workers' compensation claims, and absenteeism (Wein, 2013). Documented ROI associated with comprehensive EWPs, for example, has been reported to range from \$1.65 to \$3.48 for every dollar spent (Baicker, Cutler, and Song, 2010; Naydeck, Pearson, Ozminkowski, Day, & Goetzel, 2008). Furthermore, reduced absenteeism has been shown to provide additional savings, ranging from \$2.50 to \$10.10 saved for every dollar invested (Aldana, 2001). While these financial outcomes are certainly important to the employer, their usefulness is limited for two reasons. First, cost savings are not seen for about 5 years following program implementation (Baicker et al., 2010; Mattke et al., 2001). Second, financial outcomes are narrow and focused rather than broad and visionary, making it difficult to inform the development of appealing, effective, and comprehensive EWPs that engage employees, improve their morale, and enhance their health and quality of life, while also contributing to the

employer's mission in the most cost-effective way (Mukhopadhyay & Wendel, 2013; *The Willis Health and Productivity Survey Report*, 2015; Wein, 2013). In light of these limitations, additional outcomes, such as rates of participation in wellness activities, as well as changes in emotional, social, and physical health, job satisfaction, retention, and recruitment (Jenkins et al., 2014; *The Willis Health and Productivity Survey Report*, 2015; Wein, 2013), are becoming more and more integral to EWP assessment. These outcomes are useful in program planning and can be measured often, thereby providing regular and systematic feedback for continuous program improvement.

Employee wellness programs that are most successful in achieving positive outcomes are those that incorporate a theoretical approach to facilitating sustained health behavior change (Abood, Black, & Feral, 2003; Anshel, Brinthaup, & Kang, 2010; Cowerdy, Wang, & Eddy, 1995; Glanz & Rimer, 2005; Sallis et al., 2006). In general, a theoretical model/framework can help identify multiple levels of influence on behaviors while specific health behavior change theories can be used to develop strategies at each level (Glanz & Rimer, 2005). In health promotion, the Social Ecological Model organizes the potential levels of influence on health behaviors hierarchically, ranging from the individual, interpersonal, organizational, and community levels to the more broad public policy level of influence (Bronfenbrenner, 1981; Brown, 2015; McLeroy, Bibeau, Steckler, & Glanz, 1988). Understanding these levels of influence at the workplace can inform the development of EWPs. Health behavior change theories, such as the Social Cognitive Theory and Transtheoretical Model, can then be used to design strategies to implement at each of these levels in order to achieve sustained improvements in health behaviors (Jenkins et al., 2014).

While the positive impact of theory-driven, comprehensive EWP in a variety of settings is clear (Pronk, 2014), there is surprisingly limited research in university settings. With access to recreational facilities, as well as faculty and students engaged in health- and organizational leadership-related studies, university settings are well-suited to offer EWPs (Carter, Kelly, Alexander, & Holmes, 2011). Yet implementing the typical EWP model poses unique challenges in university settings, especially public universities (Hill-Mey et al., 2015). Shrinking state appropriations and pressures around ever-increasing tuition and fees require that universities be creative in finding affordable, high quality, and sustainable approaches to improving employee health.

The challenges faced at Texas State University in designing and implementing an EWP for its employees are illustrative of this struggle. With more than 38,000 students and 5,000 employees on two campuses, Texas State is the 4<sup>th</sup> largest public university in the state, and the 34<sup>th</sup> largest in the country. The university espouses the belief that a healthy workforce is essential to carrying out its mission of education and research, and is committed to curtailing the rise in the cost of health care and of tuition. In 2013, Texas State decided to proactively promote employee wellness by implementing a comprehensive EWP. The purpose of this paper is to describe the systematic envisioning, development, implementation, and evaluation of a comprehensive, low cost, and sustainable EWP grounded in health behavior change theory at a large university.

### *Backdrop*

Historically, Texas State employees have had *fee-based* access to facilities, including a Student Recreation Center, as well as to services, including group exercise classes, personal training, and health-related physical fitness testing offered by a unit of the university called Total

Wellness. Total Wellness is a wellness service provider run by faculty and their students in the Department of Health and Human Performance (HHP). Employees have also had *free* access to tennis courts, a walking track, open swim at an Aqua Sports Center, and racquetball and basketball courts at the Jowers Center, a large complex that houses HHP. Since 1985, employee participation in campus wellness activities has been incentivized by a university policy allowing for 30 minutes of paid release time per workday.

In March 2013, university administrators decided to more proactively promote employee wellness by funding the creation of an exemplary EWP with expanded services offered free of cost. To this end, the Work Life Coordinator from Human Resources began by reviewing state and national resources regarding EWPs as well as existing EWPs at other universities to identify optimal components of effective and comprehensive EWPs. She determined that such programs include a variety of intervention components that promote positive health behaviors, such as tobacco cessation, breastfeeding, healthy eating and drinking, stress management, and physical activity. Next, she conducted an environmental scan and identified existing facilities and services offered by various academic and nonacademic units on campus. Because these campus resources were not coordinated, not well publicized, and often fee-based, she concluded, that, as a whole, they were under-utilized by employees.

In July 2014, the Work Life Coordinator created a leadership team to develop the university EWP. The team consisted of faculty from Total Wellness, the Division of Nutrition and Foods, and the Department of Physical Therapy. The following sections delineate how this team systematically envisioned, developed, implemented, and evaluated a comprehensive EWP grounded in health behavior change theory.

### *Envisioning, Planning and Development*

The envisioning, planning, and development phase lasted four months, from August through December of 2014. (See Figure 1). During this time, input was gathered through an on-line survey disseminated to Texas State employees and administrators, discussion groups with staff and faculty, one-on-one interviews with administrators, and meetings with the Wellness Advisory Council, the President's Cabinet, the Council of Academic Deans, the Staff Council, and the Council of Chairs, to name a few.

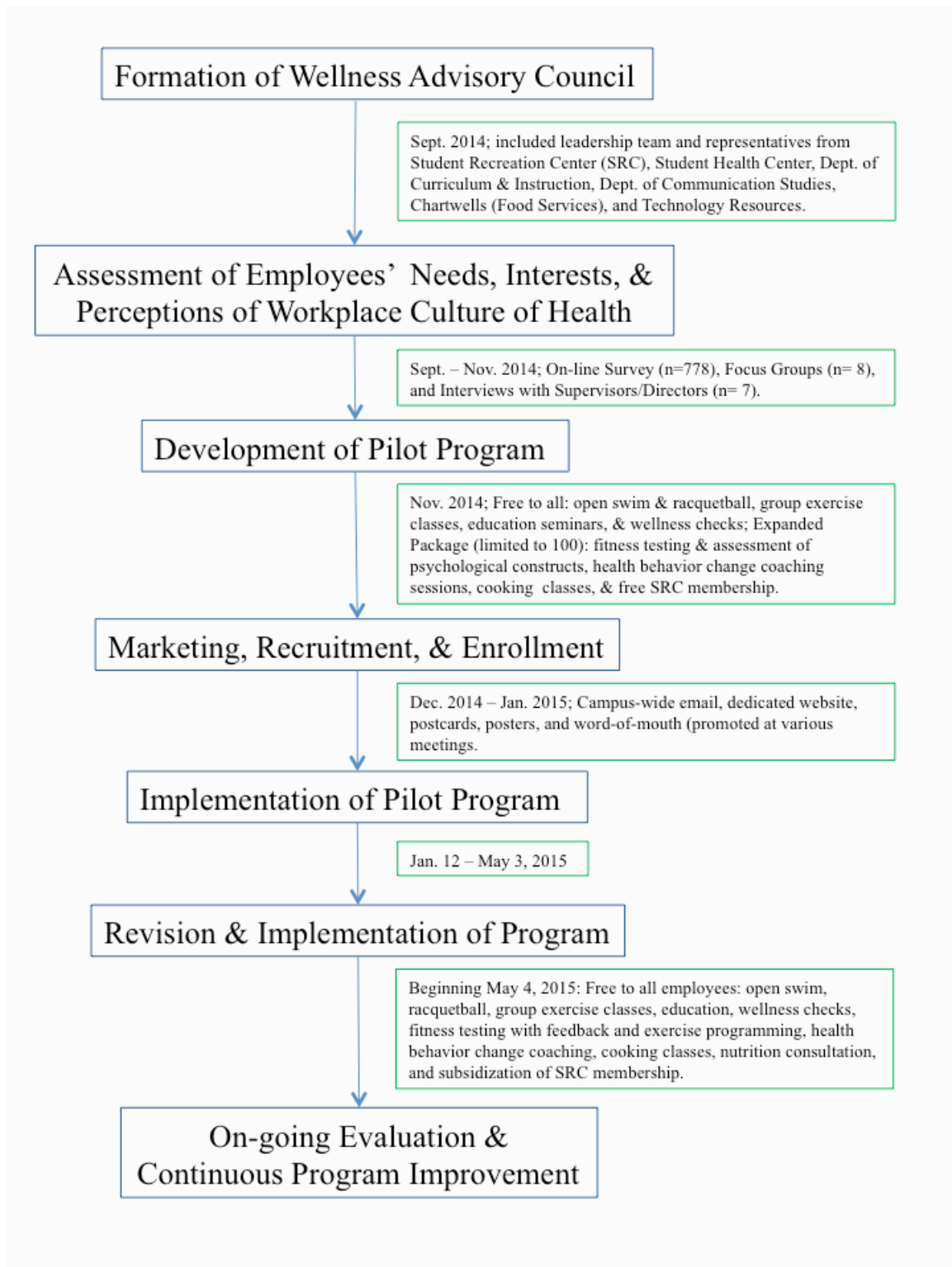


Figure 1. Implementation Plan of the Texas State Employee Wellness Program.

*Wellness Advisory Council.* The first step was to form a Wellness Advisory Council, which consisted of the leadership team and faculty and staff from other key University units, including the Student Health Center, the Student Recreation Center, Department of Communication Studies, Chartwells (Food Services), Department of Curriculum Instruction, and Technology Resources. The Council was formed for three primary reasons. First, some members represented units that could contribute services to the EWP. Second, all members, because of their expertise, could provide meaningful guidance to the leadership team. Third, members could serve as advocates for the EWP, helping to spread the word and encouraging employees to participate. Initially, the Council met monthly. Once the program was implemented, meetings were reduced to one time per semester.

*Assessment of Employee Needs, Interest, and Perception of Workplace Culture of Health.* To guide the development of an EWP, employee wellness needs, interests in an EWP, and perception of the workplace culture of health were assessed via the administration of an on-line survey to all employees and a series of discussion groups involving faculty and staff from academic and non-academic departments. Almost 1,000 employees participated in this process. Specifically, an on-line survey was distributed to all benefits-eligible employees (n=3,392) in October, 2014. The survey was completed by 778 employees (23%) with a majority of the respondents being female (70.8%), 40 to 59 years of age (52.2%), employed as staff (72.7%), and employed full time (72.7%). Of most significance, and thereby supporting the need for an EWP, 65% of respondents reported that they were overweight or obese, 59% reported not meeting minimum recommended physical activity guidelines for aerobic conditioning, and 66% reported not meeting minimum guidelines for muscular strengthening. Responses to open-ended survey questions also revealed that employees felt stressed and overworked. Thus, it is of no

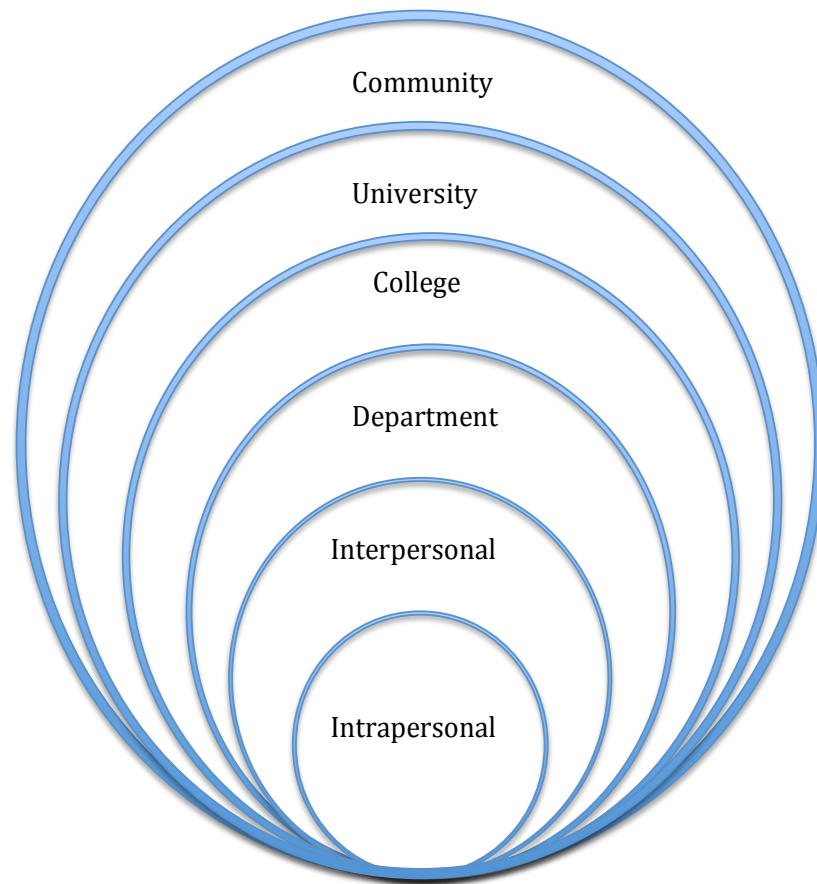


surprise that a majority of the respondents indicated that they were very interested in and would participate in a comprehensive EWP if they could. Despite the need and interest, open-ended questions revealed that employees believed that they would not be able to participate in an EWP due to heavy workloads and lack of supervisor support.

After survey results were reviewed, eight discussion groups, each with 10 to 20 employees, were held to gain a better understanding of employees' wellness needs, interests in an EWP, and perceptions of the workplace culture of health. While there were some exceptions, the vast majority of focus group participants believed that departments did very little to encourage healthy behaviors and to orient new employees to campus wellness resources. They also believed, based on heavy workload expectations, that supervisors and co-workers did not support employees taking wellness time during the workday. Collectively, focus group participants expressed a strong desire for management and co-workers to adopt and model healthy behaviors and publicly support employee engagement in wellness activities, thereby creating a culture of health that supported healthy behaviors, and making healthy choices the easy choices.

*Theoretical Framework.* Once information about employees' wellness needs, interests in an EWP, and perceptions of the workplace culture of health was gathered and analyzed, the leadership team set out to develop an EWP. The framework used for the development of the EWP was a Social Ecological Model (SEM), which suggests that both social and environmental factors impact individual behavior (Kwon, Marzec, & Edington, 2015). To this end, the leadership team determined the levels of influence at the university were intrapersonal, interpersonal, department, college, university, and community. (See Figure 2). Through the lens of the SEM, the dynamic interaction between an individual and environmental factors influences

the maintenance of a healthy and active lifestyle (Sallis et al., 2006). For long-term health behavior change to occur, one must both see the need for and be personally motivated to change (Glanz & Rimer, 2005). In turn, one's physical, social, and economical environments must be conducive to those motivations. In tandem, these models can guide how to best support individuals adopting healthy behaviors.



*Figure 2. The Social Ecological Model at Texas State University Illustrating the Levels of Behavioral Influence.*

Three behavior change theories, the Self-Determination Theory (SDT), Social Cognitive Theory (SCT), and the Transtheoretical Model (TTM), were used to develop strategies geared toward effecting long-term health behavior change. Self-Determination Theory emphasizes the idea of autonomous self-regulation, which is the balance of intrinsic motivation and extrinsic

motivation (Deci & Ryan, 2012). The SDT was used because the coaching was meant to help employees make healthier choices of their own volition. Social Cognitive Theory links the likelihood of changing health behaviors to one's self-efficacy (confidence in ability to perform an action), goals, and outcome expectations (Bandura, 1998). The SCT describes six concepts that should be addressed in the pursuit of change: the interaction between the person, behavior, and performance environment (reciprocal determinism), the knowledge and skill required (behavioral capability), the anticipated results of the behavior (expectations), confidence in ability to perform an action (self-efficacy), and witnessing the results of behavior change in others (observational learning, "modeling") (Bandura, 1998). The Transtheoretical Model, also known as the Stages of Change, describes the process of behavior change as a continuous cycle through stages of precontemplation (no intention of taking action in coming six months) contemplation (plans to take action within the next six months), preparation (plans to take action within the next thirty days and begun modifying behaviors), action (behavior has been changed for less than six months), and maintenance (behavior change has persisted for more than six months) (Prochaska & DiClemente, 1983; Glanz & Rimer, 2005). The TTM was chosen because it can be used to assess the stage of change and therefore help better prescribe assistive strategies.

As the basis for the design of the wellness program, the SEM and three theories served as the guide for the development of overarching and specific goals that the leadership team thought would be most indicative of favorable change. The overarching organizational-level goals were to reduce the rate of healthcare costs, increase productivity in terms of presenteeism and absenteeism, increase employee and student retention, foster a culture supportive of wellness, improve employee morale and sense of community, and offer learning opportunities and practice

for students. The goals specific to employees were to connect values with actions, decrease sedentary behavior, increase physical activity, improve dietary habits, increase the opportunity for social interaction, reduce stress, and improve overall physical and mental health and well-being.

With goals and a plan for program implementation, one-on-one interviews with leadership representatives from the seven largest departments across the university were held. In these meetings, the goals of the EWP were shared and the university leaders were asked to model healthy behaviors and support the health of those they manage and oversee. All who were interviewed agreed that a healthy workforce would be better able to remain calm under pressure, deliver outstanding service to their constituents, and to be actively engaged, present, and productive at work. They also agreed that administrators/supervisors are critical to the success of an EWP and that vocalizing their support, modeling wellness, and working with employees' schedules are reasonable strategies for transforming the current culture to one that embraces wellness and gives supervisors, staff, and faculty permission to make their health a priority.

The results from the needs and interests survey, discussion groups, supervisor interviews, and meetings with campus leadership committees guided the programming of components capable of achieving the goals. Next, a pilot was launched. It was a 15-week pilot program with the primary focus on fine-tuning the services, thereafter followed quickly by revision and implementation of the program known as *Wellcats*.

#### *Implementation: Pilot Program*

*Basic Services.* The pilot program was free to employees on the main campus and consisted of: a health risk assessment (HRA) and feedback; weekly newsletters containing health behavior change coaching tips and nutrition guidance; online resources including exercises

videos, recipes, and wellness education; three wellness checks; bi-weekly educational sessions; 25 group training classes varying in format (e.g., Zumba®, yoga, step aerobics, and kickboxing) offered at five different locations, and before work, at lunch, and after work; open swim at the Aqua Sports Center; and racquetball at the Jowers Center.

At the time of the launch of the pilot, Texas State University employed 3,392 benefits-eligible employees (1,594 males and 1,798 females) on its main campus. Of these, 514 (15.2%) registered for the EWP and completed the HRA. Ninety-nine were males and 415 were females, representing approximately 6% and 23% of main campus employees, respectively. On average, registered members attended 12.9 events over the 15-week period. Tables 1-3 summarize the health status of the registered members upon entering the program.

Table 1

*Age, Height, Weight, and Body Mass Index of Registered Members at Baseline.*

	Males (n=97)		Females (n=398)	
	Mean±SD	Range	Mean±SD	Range
Age (yr)	43.1±11.1	24-70	45.6±11.2	22-82
Height (m)	1.8±0.1	1.4-1.9	1.6±0.1	103-295
Weight (kg)	95.0±22.5	59.1-204.5	77.5±17.5	46.8-134.1
Body Mass Index (kg·m <sup>-2</sup> )	30.2±7.0	19.8-59.5	28.9±6.4	18.2-54.1

Table 2

*Weight Status of Registered Members at Baseline.*

	Overall	Males	Females
	(n=495)	(n=97)	(n=398)
Underweight	1 (0.0%)	0 (0.0%)	1 (0.3%)
Normal weight	151 (30.5%)	19 (19.6%)	132 (33.2%)
Overweight	154 (31.1%)	40 (41.2%)	114 (28.6%)
Obese I	98 (19.8%)	21 (21.6%)	77 (19.3%)
Obese II	57 (11.5%)	10 (10.3%)	47 (11.8%)
Obese III	34 (6.9%)	7 (7.2%)	27 (6.8%)

Table 3

*Risk of Cardiovascular, Pulmonary, and Metabolic Disease of Registered Members at Baseline.*

	Overall	Males	Females
	(n=495)	(n=97)	(n=398)
Low	201 (50.4%)	40 (41.2%)	161 (40.5%)
Medium	148 (29.9%)	32 (33.3%)	116 (29.1%)
High	146 (29.5%)	25 (25.8%)	121 (30.4%)

Of the 514 registered members, 338 participated in open swim, wellness checks, educational sessions, group exercise classes, or engaged in some combination of these opportunities during the 15-weeks for a total of 4,362 attended events. On average, registered members attended 12.9 events over the 15-week period. (See Table 4).

Table 4

*Attendance Rates of Registered Members in Basic Services over the 4-month Period.*

Basic Services	Registered Members (%)	Events	Events Attended per
		Attended	Registered Member (Range)
Open Swim at the ASC	39 (7.6%)	329	8.4 (1-24)
Wellness Check	78 (15.2%)	90	1.2 (1-3)
Educational Session	133 (25.9%)	318	2.4 (1-7)
Group Exercise	286 (55.6%)	3625	12.7 (1-73)
Overall	338 (65.8%)	4362	12.9 (1-90)

*Expanded Services.* In addition to the aforementioned services, a select 100 employees received an “expanded package” consisting of pre- and post- fitness testing, psychological construct testing with feedback, health behavior change coaching, hands-on-cooking classes, and membership to the main campus recreation center. The eligibility criterion for the expanded package included completed HRA and General Release/Wavier forms, indicated interest in the expanded package, and classified as moderate or high risk for cardiovascular disease based on HRA responses.

To select 100 participants in the Expanded Package, the 195 *eligible* applicants were assigned numbers using random number generation software. The first 100 were contacted, invited to participate, and fully informed about what was expected of them. To that end, they were asked to read and sign a commitment contract, affirming their willingness to complete pre- and post-fitness tests, attend one hands-on cooking class, exercise at the SRC at least one day per week, and participate in health behavior coaching sessions. If they chose to withdraw their name after reading the contract, then they were replaced with an alternate (i.e., the next person on the

list). Overall, 22 people withdrew their names and were replaced with alternates. Tables 5-7 summarize the health status of Expanded Package participants upon entering the program. (It is worth noting that the Expanded Package participants' data are included in Tables 1-4, as a part of the total number of employees who registered for the EWP.)

Table 5

*Age, Height, Weight, and Body Mass Index of Expanded Package Participants at Baseline.*

	Males (n=20)		Females (n=80)	
	Mean±SD	Range	Mean±SD	Range
Age (yr)	44.0±10.5	23-66	48.8±9.6	27-66
Height (m)	1.8±0.1	1.6±2.1	1.6±0.1	1.5-1.8
Weight (kg)	103.2±31.6	60.6-214.3	83.6±19.9	46.6-131.9
BMI (kg.m <sup>-2</sup> )	33.1±10.2	20.9-67.8	31.6±7.3	18.7-54.1

Table 6

*Body Weight Status of Expanded Package Participants at Baseline.*

	Overall (n=100)	Males (n=20)	Females (n=80)
Underweight	0	0	0
Normal weight	23	3	20
Overweight	22	5	17
Obese I	23	5	18
Obese II	18	4	14
Obese III	14	3	11



Table 7

*Cardiovascular, Pulmonary, and Metabolic Disease Risk Status of Expanded Package Participants at Baseline.*

	Overall	Males	Females
Low	0	0	0
Moderate	54	10	44
High	46	10	36

Of the 100 Expanded Package participants, 88 attended health behavior coaching classes, attended cooking classes, exercised at the SRC, participated in fitness testing, or engaged in some combination of these opportunities. (See Table 8).

Table 8

*Attendance Rates of Employees Participating in Services Offered in the Expanded Package*

Services	Expanded Package Participants	Events Attended	Events Attended per Expanded Package Participants (Range)
Student Recreation Center	51	558	10.9 (1-53)
Cooking Demonstration	73	73	1
Health Behavior Change Coaching	88	189	2.1 (1-3)

*Overall Usage.* Registration was required for participation in *Wellcats*, however, no employee was ever turned away from a wellness activity. While every effort was made to register employees before they began participating in *Wellcats*, 82 employees participated without ever registering. Thus, it is also important to report overall usage in terms of both registered and nonregistered employees participating in the EWP. These nonregistered employees attended 147 events (wellness checks, education sessions, group exercise classes, or

some combination of these) for an average of 1.72 events attended per nonregistered employee. Overall, *Wellcats* was utilized by 596 employees.

#### *Formative Evaluation of the Pilot Program and Establishment of Wellcats*

*Program Quality.* The data collected during the pilot was formative in nature, with the primary purpose of developing a high quality, low cost program that would impact the greatest number of employees. Members were assessed multiple times and in multiple venues. To improve the quality of group training classes, members were asked to complete a hard copy version of a survey at the end of each group training class during week 4 of the pilot. To increase the number of male registrants, male members were also asked to complete an on-line survey 6 weeks into the program. To ensure that *Wellcats* was meeting the wellness educational needs of employees attending educational sessions, all employees attending educational sessions were asked to complete a hard copy version of a survey at the end each session. Based on input from the respondents, the leadership team adjusted program services, as necessary, in an attempt to make *Wellcats* more appealing to all employees.

*Program Impact.* Though not a primary focus of the pilot, the impact on fiscal and health outcomes was also evaluated. Regarding fiscal outcomes, as expected, more employees took wellness leave during January 12 to May 3, 2015, versus the same time period in 2014, and also as expected, the cost associated with this investment in our employees health increased. (See Table 9).

Table 9

*Wellness Leave and Associated Cost for all Texas State Employees during January 12 to May 3, 2014, versus January 12 to May 3, 2015*

	2014	2015	Year-to-Year Change (%)
N	115	220	105 (91.3%)
Hours of Wellness Leave	1,309.85	2,259.75	949.9 (72.5%)
Hours of Wellness Leave/employee	11.39	10.27159	-1.1 (-9.8%)
Cost of Wellness Leave	\$34,934.91	\$60,475.30	\$25,540.39 (73.1%)
Cost of Wellness Leave/employee	\$303.7818	\$274.8877	-\$28.9 (-9.5%)

However, given the short duration of the pilot, the program was not expected to have much of a return on investment in terms of sick leave and worker's compensation. Surprisingly, positive outcomes were observed. Most notably, while more employees took sick leave during January 12 to May 3, 2015, versus the same time period in 2014, total sick leave decreased by almost 6%, resulting in an overall salary savings of \$90,000.

Table 10

*Sick Leave and Associated Cost for all Texas State Employees during January 12 to May 3, 2014, versus January 12 to May 3, 2015*

	2014	2015	Year-to-Year Change (%)
N	1831	1901	70 (3.8%)
Hours of Sick Leave	58,942.4	55,441.9	-3,500.5 (-5.9%)
Hours of Sick Leave/employee	32.2	29.1	-3.0 (-9.6%)
Cost of Sick Leave	\$1,541,633.2	\$1,450,993.9	-\$90,639.3 (-5.9%)
Cost of Sick Leave/employee	\$842.0	\$762.9	-\$79.1 (-9.4%)

With regards to worker's compensation claims, 20 claims each were made between the two time periods being studied (January 12 to May 3, 2014, versus January 12 to May 3, 2015). While no changes were observed, the type of claims that the EWP has the potential of impacting did change. The number of claims related to musculoskeletal injuries (i.e., falls, sprains, and/or strains) decreased from 9 to 5. Unfortunately, medical claims were not made available by the insurance provider to the University. Therefore, a true ROI could not be calculated.

The effectiveness of the pilot on health outcomes was determined by analyzing pre-posttest changes in health-related physical fitness and psychological constructs (see Table 11 and Table 12). While all 100 employees participated in pre-testing, only 77 returned for post-testing. Thus, data analysis related to the impact of the program on health-related physical fitness was limited to those who completed both pre- and post-testing. Paired sample *t*-tests were used to compare the differences for each Expanded Package participant between pre-and post-test. There was a significant improvement in all health-related physical fitness measures except BMI. (See Table 11).

Table 11

*Pre- and Post-Test Changes in Measures of Health-Related Physical Fitness in the Expanded Package Participants (n=77)*

	Pre-Test	Post-Test	Overall Change	% Change
Systolic Blood Pressure (mmHg)	133.1(16.7)	129.1 (15.6)	-4.1(12.4)*	-2.5(10.3)
Diastolic Blood Pressure (mmHg)	80.7 (10.4)	78.5 (10.9)	-2.2(7.9)*	-2.3(10.1)
Resting Heart Rate (beats*min <sup>-1</sup> )	76.6 (10.7)	73.4 (9.7)	-3.2(7.8)*	-3.6(9.4)
Abdominal Circumference (cm)	100.3 (15.5)	99.3 (16.0)	-1.0(4.1)*	-1.0(3.8)
Weight (lb)	181.2 (45.6)	182.0 (45.1)	-2.2(6.2)*	-1.1(3.1)
Body Mass Index	30.8 (7.2)	30.6 (7.3)	-0.2(1.0)	-.07(3.2)
Fat Mass (kg)	77.2 (31.0)	73.8 (31.0)	-3.4(6.1)*	-4.8(8.5)
Fat Free Mass (kg)	106.3 (21.6)	108.3 (22.3)	2.0(3.3)*	1.9(3.0)
% Body Fat	40.9 (8.5)	39.3 (8.9)	-1.6(2.3)*	-4.2(6.7)
Estimated VO <sub>2</sub> max (ml/kg/min)	25.6 (7.4)	28.1 (8.4)	2.8(6.6)*	14.0(21.1)
Hand Grip Strength	60.3 (17.1)	62.5 (17.2)	2.3(6.9)*	4.9(13.7)
Push Ups	4.4 (6.3)	8.3 (7.3)	3.9(4.8)*	121.3(148.9)
Curl Ups	12.6 (23.9)	27.8 (32.8)	15.4 (20.7)*	166.3(274.3)
Sit and Reach	25.3 (9.4)	27.8 (9.0)	2.9(4.1)*	13.5(18.0)

\* $p < .05$

For the psychological constructs, a multiple regression analysis was conducted with post-survey self-efficacy as the dependent variable and pre-survey self-efficacy, participation in group fitness classes, health behavior change coaching sessions, aqua sports classes, cooking demonstrations, educational sessions, and attendance at the SRC as independent variables.

Results revealed that greater participation (both quantity and variety of participation) related to greater gains in self-efficacy ( $F=4.080$ ,  $p < .001$ ), thereby indicating that self-efficacy was the

most important predictor of the variables measured of whether or not an individual performed healthy habits regularly. (See Table 12).

Table 12

<i>Pre-Post Test Changes in Psychological Constructs in the Expanded Package Participants</i>				
Construct	Pre-Test Score	Post-Test Score	t-Test*	Comment
Stage of Change	2.77	3.91	-6.63671 (n=66)	Participants moved from thinking about becoming more physically active to being more physically active
Self-efficacy	2.75	2.96	-2.3271 (n=72)	Participants moved closer to moderately confident in their ability to be physically active when there are significant barriers
Perceived Competence	5.32	5.62	-1.82916 (n=69)	Participants gained confidence in their ability to exercise regularly and over the long term
Health Care Climate Questionnaire	3.86	4.80	-4.43642 (n=69)	Participants viewed the employee wellness staff as more supportive of their concerns and issues at the post-test compared to the pre-test date

\* $p < .01$

### *Implementation of Wellcats*

The leadership team used the information gathered from laboratory, survey, and attendance data, as well as from meetings with the Advisory Council, other key groups, and supervisors, during the pilot to revise and enhance the program. Many of the services offered to the Expanded Package participants during the pilot were included in *Wellcats* and made available to all employees, at no additional cost to the employee. This was possible due to in-kind support. For instance, during the summer months, the Department of Campus Recreation agreed to provide Texas State University employees with free access to the Student Recreation Center (SRC) on Fridays and professionals volunteered to conduct a series of health behavior change

coaching sessions as well as meet with individual teams within the Facilities Department. To this end, in May of 2015, *Wellcats* was launched. Table 1 is a summary of the goals, interventions, and assessments aligned with the levels of influence based on the SEM.

Table 13

*Aligning Program Goals, Interventions, and Assessments with Levels of Influence*

Social Ecological Model			
	Goals	Interventions	Assessments
Intrapersonal	Connect values with behaviors	HBCC group sessions On-line coaching tips LnL	WHI survey ( <i>Wellcats</i> member annual survey, coaching participants, campus-wide survey 2015)
	Decrease sedentary behavior	Group Ex SRC subsidy LnL HBCC Wellness PPS On-line coaching tips	Attendance Wellness time <i>Wellcats</i> member annual survey (Sedentary, PA, BMI) Campus Wide (PA and BMI) Pilot Exit Survey
	Increase physical activity	Group Ex SRC subsidy LnL HBCC Wellness PPS On-line coaching tips	Attendance Wellness time <i>Wellcats</i> member annual survey (Sedentary, PA, and BMI) Campus Wide Survey (PA and BMI)
	Improve dietary habits	LnL (nutrition) One-on-one nutrition consultation Cooking classes On-line tips, videos Wellness pps	<i>Wellcats</i> member annual survey Attendance Wellness time Campus-wide survey
	Reduce stress	Group ex (30-min SSNS, non-pretzel yoga) LnL (stress, sleep) Bobcat Balance (EAP)	Overall attendance, attendance to SSNS, yoga, non-pretzel yoga) Stress scale –annual <i>Wellcats</i> Members survey
	Improve overall physical and mental health	<i>Wellcats</i>	Change in risk/health status ( <i>Wellcats</i> member annual survey, BMI campus-wide) Perceived Health (campus-wide survey; <i>Wellcats</i> member annual survey) Improved health (campus-wide survey; <i>Wellcats</i> member annual survey)

Table 13- Continued

Social Ecological Model	Goals	Interventions	Assessments
Interpersonal	Increasing conversations about health, encouraging, and support/encourage employees to initiate dialogue about health	LnL HBCC Cooking classes On-line resources	Discussion groups Campus-wide survey 2015 <i>Wellcats</i> member annual survey
Department/College/Division	Creating a healthy/supportive environment, management support for health behaviors (allowing employees to take wellness time)	Meeting with supervisors Easy identification of resources Supervisor tips Facilities activities CAD Council Chairs	Supervisor interviews Discussion groups Campus-wide Survey <i>Wellcats</i> member annual survey
University	Make the healthy choice, the easy choice Creating a culture supportive health so that employees can make healthy choices Increase awareness of these issues	NEO Lactation Rooms Meeting with Director of Food Services Advisory Council President's Cabinet Student Affairs Staff Council HR Forum Advisor Classes were held across campus before, during, and after the work-day Advertisements posted on social media, an official website, and electronic news letter Provide access to the student recreation center, aqua sports center and other fitness facilities, Offer mid-day classes that can be performed without perspiration or fatigue Campus walking maps and rated according to the number of steps and level of intensity	NEO Wellness time (2014 versus 2015) Culture of Health Survey Permanent funding of the program
Community	Model of good corporate citizen for the community	<i>Wellcats</i>	Reach of the program (SMCISD, City, Child Development Center), Hays Caldwell Women's Center

Note: Lunch n' Learns=LnL; Health behavior change coaching=HBCC; San Marcos City Independent School District=SMCISD; Texas State University employee wellness program=*Wellcats*; Human Resources Forum=HR Forum; New Employee Orientation=NEO; Council of Academic Deans=CAD; Wellness policy and procedures statement=Wellness PPS; Women's Health Initiative=WHI; Body mass index=BMI; Physical activity=PA; Student Recreation Center=SRC; Strength Stretch No Sweat=SSNS.



The program was available to all main campus employees and involved the administration of an HRA with more extensive feedback; group training classes (offered approximately 25 times per week at various times and locations); open swim at two locations (offered four days per week at mid-day and evening); racquetball (offered five days per week); fitness testing with feedback and programming; one-on-one nutrition consultation, and hands-on cooking classes; behavior change coaching group sessions; free access to the SRC on Fridays; weekly newsletters that highlighted upcoming events and a wellness blog that included health behavior change coaching tips, nutrition information, and exercise videos; more on-line resources (e.g., recipes and wellness education presentations); and educational sessions (offered one to two times per month). At the end of the summer months, an on-line survey was disseminated to all members again. Most program changes were minor and limited to changes in group training class offerings in terms of format, time, and location. The most significant change included the subsidization of SRC membership, with HR covering \$25 of the semester membership to the first 200 employees who signed up for a membership.

The leadership team also began providing specific support services to the Facilities Department, as their employees represent some of the lowest paid employees, thereby representing an underserved population, and are at greatest risk for work-related injuries due to the nature of their job. During the summer months, representatives from the leadership team attended 20 meetings with Facilities teams, meeting with 208 employees. The two primary purposes of these meetings were to 1) collect information about what would encourage employees to participate in the EWP, and 2) provide information about health, wellness and safety at work. Then, beginning in August, 2015, representatives for the leadership team began meeting with each Facilities team during their regular weekly meetings to provide additional

health and wellness information, training, and support. The content discussed at these meetings varied depending on the needs and interests of the particular team. Topics covered included, but were not limited to, warming up properly, integrating physical activity during their day, strengthening and stretching muscles involved in work-related movements, and eating a healthier diet.

Also, in October of 2015, *Wellcats* was offered to employees at the second campus, located in Round Rock, Texas, approximately 70 miles from the main campus. Employees who registered for the program received weekly newsletters that highlighted upcoming events and a wellness blog that included behavior coaching tips, nutrition information, and exercise videos, access to on-line resources (e.g., recipes, wellness education presentations), and opportunities to attend the education sessions (offered one to two times per month) remotely. Furthermore, group training classes were offered two times per week.

*Overall Usage.* During the summer, 316 employees utilized the services offered through the EWP. Compared to overall usage data for spring, fewer employees utilized the EWP summer program. This reduction was expected since some employees may either be on vacation or not working during the summer. Furthermore, with a reduction in the workforce seen during the summer, personnel is limited in many departments, making it difficult for employees to take time for wellness. As expected, when employees returned from summer vacation and new employees joined the University, the numbers of participants increased. There were 474 registered members during the fall.

The total cost of envisioning, planning, developing, and implementing the pilot was \$53,304.01 (\$103.7 per registered member or \$89.40 per participant when considering both registered and nonregistered participants). Of this, approximately \$40,304.01 (\$78.41 per

registered member) funded activities involved with envisioning, planning, developing, and implementing the basic services; and \$13,000 (\$130 per expanded package participant) funded the services provided in the Expanded Package. It is worth noting, however, that this amount is not representative of the true cost of the program, as faculty from the leadership team volunteered their expertise and time for envisioning, developing, overseeing, and analyzing *Wellcats*.

The approved budget for the 16 months following the pilot (May 4, 2015 - August 31, 2016) was \$61,000. At the writing of this paper, *Wellcats* had just been launched. Thus, a total number of employee members enrolled was not available. However, based on the success of the pilot, we expect at least 600 to participate in *Wellcats* for an average annual cost per registered employee of \$102. This is likely a very reasonable investment considering not only the benefits described earlier in this paper, but also that the annual cost of some University EWP programs is more than \$200 per participating employee (Byrne et al., 2011). As with the pilot, *Wellcats* is supported by the in-kind support of faculty from the leadership.

#### *Next Step: Evaluation and Sustainability*

*Wellcats* was developed with the intention of becoming institutionalized. While the program was funded for 16 months following the pilot, institutionalizing *Wellcats* required additional resources and more employees dedicated to sustaining a successful program. Thus, a budget of \$150,000 was proposed for additional personnel, marketing materials, facility rentals, facility membership fees, pre- and post- lab testing assessments, and cooking course materials. To support the program beyond 16 months, members of the *Wellcats* administration team sought to encourage and support the surfacing of peer leaders by meeting with teams on campus to discuss incorporating healthy behaviors throughout the workday such as stretching and

strengthening specific muscles. Finally, to support institutionalization of the program, *Wellcats* will undergo continuous evaluation. The *Wellcats* leadership team will thoroughly reviewed measures of effectiveness and impact. Specifically, financial, biomedical, behavioral, and biopsychosocial data will be gathered at the beginning, during, and after the first 12 months of implementation.

### *Conclusion*

The purpose of this report was to describe the methodical and systematic envisioning, development, implementation, and evaluation of a theory-driven, comprehensive EWP at a large university. To this end, a leadership team with representatives from the Department of Health and Human Performance, Division of Nutrition and Foods, Department of Physical Therapy, and Human Resources assessed the needs, interests, and perceived culture of health of employees and supervisors, and developed desired outcomes indicative of a healthy workforce. The leadership team then, envisioned, planned, developed, and implemented a comprehensive EWP by coordinating and enhancing pre-existing services, adding additional services centered around behavior change and support, education, nutrition, and physical activity. Unique to this program is that complexities of human behavior, especially within the workplace, were considered and addressed using a theoretical approach. With the understanding that a culture of health cannot only support people that are healthy but also promote positive health behavior change in those that are not healthy, levels of influence were identified and strategies were developed to foster health behavior change within each level. Data collection for the systematic evaluation of this program is ongoing and results of program effectiveness and theory fidelity will be reported in a future report.

The design of this EWP, known as *Wellcats*, has several strengths in that it is theory-driven, interdisciplinary, comprehensive, and benefits the employer, employees, and students. Interdisciplinary and comprehensive programs are more likely to reach an array of employees and elicit change in those reached (Hill-Mey et al., 2015; Pronk, 2014; Ryan, Chapman, & Rink, 2008). In addition, there is a growing recognition for the effect on student learning outcomes and the role an EWP can have in providing teaching, research, and field experience opportunities for graduate and undergraduate students (Carter, Kelly, Alexander, and Holmes, 2011; Essig, Sinclair, Hare, Moreillon, Funk, & Swank, 2004; Brinthaup, Kang, & Anshel, 2013). *Wellcats* involves students from multiple disciplines to administer biometric screenings, provide fitness coaching, teach educational sessions and fitness classes, communicate with participants, organize data collection, and participate in advisory council meetings. As the program is in its infancy, the *Wellcats* leadership team will evaluate program effectiveness and make a case annually to the University to continue to receive funding and support.

## **II- THE EVALUATION OF THEORY-BASED EMPLOYEE WELLNESS PROGRAM AT A LARGE UNIVERSITY**

A large portion of health care costs is due to the treatment of chronic diseases, many of which are preventable and targeted by employee wellness programs (EWPs) (Mattke et al., 2011). EWPs include, but are not limited to: the provision of information and classes on healthy lifestyle choices, establishment of off-site health club and gym memberships, smoking cessation efforts, and the provision of on-site health, medical, and dental facilities/labs. The savings in terms of reduced medical costs generated by comprehensive EWPs can exceed the cost of the initial investment, also known as Return on Investment (ROI), a measure that is often used to evaluate the effectiveness of an EWP (Wein, 2013). However, reliance on ROI for new programs may be unrealistic, as generated savings may take several years to accrue and recover the initial investment (Fitch, 2008). Basing the evaluation of an EWP solely on ROI may result in the termination of viable programs (Mukhopadhyay & Wendel, 2013), and fail to capture affirmative change in the form of healthy behaviors that will lead to improved health outcomes, thereby reducing disease risk and associated health care cost.

According to the Willis Health and Productivity Survey Report (2015), practitioners recognize that ROI sheds limited light on the effectiveness of EWPs and the majority have shifted toward evaluating the success of a program based on the value of investment (VOI). There is no one standardized way to assess VOI, rather it allows programs to set outcome goals that are reflective of the vision of the program (Wein, 2013). A VOI-based EWP, for instance, may aim to assess program efficacy in terms of participation rates, worksite productivity, absenteeism, job-satisfaction, health risk appraisals (HRAs) and biometric screenings, and changes in health behaviors and habits (Wein, 2013; *The Willis Health and Productivity Survey*

*Report*, 2015). When setting goals, VOI-based EWP tend to give precedence to improving overall health by making healthy choices easy and thus improving the culture of health in the workplace (*The Willis Health and Productivity Survey Report*, 2015).

Health behaviors are rooted in culture (Glanz & Rimer, 2005), therefore, practitioners should aim to not only make changes in individuals but also in the environment (Brown, 2015; Glanz & Rimer, 2005; Jenkins et al., 2014). Broadly speaking, interventions most likely to bring about sustainable change are those that are grounded in theoretical frameworks and health behavior change theories (Abood et al., 2003; Anshel et al., 2010; Cowerdy et al., 1995; Glanz & Rimer, 2005). Frameworks help identify levels of influence of health behavior, and theories describe the process of health behavior change at those specific levels (Glanz & Rimer, 2005). The likelihood of effecting sustainable change is further increased by attending to the theoretical fidelity of frameworks and health behavior change theories used (Allan & Ungar, 2014; Moncher & Prinz, 1991; Mowbray, Holter, Gregory, & Bybee, 2003).

Described as “confirmation that the manipulation of the independent variable occurred as planned” (Moncher & Prinz, 1991), fidelity can be determined by establishing valid and reliable criteria that demonstrate adherence to an intervention design or specific model (Moncher & Prinz, 1991; Mowbray et al., 2003). Establishing fidelity criteria can ensure that frameworks are followed and interventions are applied as intended. While theoretical frameworks and interventions grounded in theory have been used to inform the design of EWPs (Abood et al., 2003; Anshel et al., 2010; Cowerdy et al., 1995; Radler, Marcus, Griehs, & Touger-Decker, 2014), few programs have grounded the entire process, from design to evaluation, in theory. Further, little to no reports provide an assessment of intervention or theory fidelity (Mowbray et al., 2003).

As theoretical approaches are most likely to elicit behavior change, and theoretical fidelity can increase the efficacy of such approaches, one could argue it is the most cost effective approach (Glanz & Rimer, 2005; Mowbray et al., 2003). For many corporations, cost-effectiveness is of utmost concern; this is especially true at university worksite settings, in which employee health care costs cannot be passed on to students. *Wellcats* at Texas State University is a comprehensive, health behavior change theory-based EWP. The genesis of the program including the envisioning, development, implementation, and evaluation was guided by the theoretical framework of a Social Ecological Model (SEM). Notably, *Wellcats* incorporated three health behavior change theories (Social Cognitive Theory, Transtheoretical Model, and Self-Determination Theory) in its design of interventional strategies at the levels of influence identified by the SEM. (See Chapter I, Table 13).

Chapter I described the systematic envisioning, development, and implementation of *Wellcats*. The purposes of this study were to evaluate: 1) the effectiveness of this comprehensive, theory-based EWP after the first year of implementation using financial and biopsychosocial metrics; and 2) the fidelity of theories and interventions used. As the reliance on VOI and utilization of theory-driven EWPs increases, it is key that a standardized process for the determination of fidelity criteria be established and included in the evaluation of wellness programs, in order to ensure that interventions and theories be applied appropriately and effectively.



## METHODS

### *Summary of Setting and Intervention*

Beginning in January 2015, *Wellcats* was offered to 3,200 Texas State faculty and staff on the main campus in San Marcos, Texas. Employees were recruited through post cards, email, posters, and word of mouth. *Wellcats* includes HRAs and feedback, opportunity for regular wellness checks (blood pressure, body mass index), weekly newsletters, 25 weekly group training classes, lunch and learn education classes, open swim and racquetball, and access to on-line exercise videos, health behavior change coaching, nutrition consultations, and cooking classes. This study used campus-wide data gathered through an interests survey, membership data gathered from an annual survey and HRAs, human resources reports of wellness leave and associated cost and sick leave and associated cost, and qualitative data gathered from supervisor interviews and discussion groups for evaluation.

### *Program Effectiveness*

Sick leave hours, cost of sick leave, wellness leave hours, and cost of wellness leave were used to assess effectiveness in terms of financial metrics. Responses to a campus-wide interests survey were used to gather biopsychosocial information to assess cultural perceptions.

*Sick Leave.* The overall percent difference in reported sick leave and associated cost for all employees between calendar year 2014 and 2015 were calculated. Next, sick leave per employee and associated cost of sick leave per employee for 2014 and 2015 as well as percent difference in sick leave per employee and difference in associated cost between 2014 and 2015 were calculated.

*Wellness Leave.* The overall percent difference in reported wellness leave and associated cost for all employees between calendar year 2014 and 2015 were calculated. Next, wellness

leave per employee and associated cost of wellness leave per employee for 2014 and 2015 as well as percent difference in wellness leave per employee and difference in associated cost between 2014 and 2015 were calculated.

*Interests Survey.* After one year of *Wellcats* implementation, an online campus-wide interest survey was distributed to all employees and consisted of closed and open-ended questions for a total of 73 questions. The survey was completed anonymously, and questions were grouped into five major themes including demographics, awareness and marketing, physical activity, nutritional habits, and health perceptions. From this survey, biomedical, behavioral, and biopsychosocial outcome variables were obtained for the primary purpose of informing program improvements. Embedded within the health perceptions section were eleven research questions to biopsychosocial outcome variables to assess program effectiveness. These questions were pertained to perceived health, self-perceptions and program perceptions of culture of health. The perceived health questions were: 1) How do you perceive your general health? 2) Has your overall health changed in the last year? For the self-perceptions and program perceptions, the level of the agreement was measured for the following statements 3) *Wellcats* is a valuable employee benefit. 4) *Wellcats* has positively influenced my health. 5) *Wellcats* has positively influenced my health. 6) It is important that *Wellcats* is offered to my coworkers. 7) *Wellcats* is an effective way for enhancing a sense of community. 8) Healthy lifestyles are supported in the workplace. 9) My immediate supervisor supports employee's efforts to adopt healthier lifestyles. 10) In my work group, there is no such thing as being “too health-oriented.” 11) Living a health lifestyle is highly valued in our work group.

### *Intervention and Theory Fidelity*

Evaluating the use of the SEM and conducting discussion groups and supervisor interviews assessed the adherence of the *Wellcats* implementation to the original design and goals.

*Theory Fidelity.* A SEM describes the dynamic interaction between an individual and environmental factors (Bronfenbrenner, 1981; Brown, 2015; McLeroy et al., 1988). When applying a SEM, the levels identified are specific to the setting. The *Wellcats* leadership team determined the levels in a university work place setting to be intrapersonal, interpersonal, department, college, university, and community. The original overarching organization-level goals were to reduce the rate of health care costs, increase productivity in terms of presenteeism and absenteeism, increase employee and student retention, foster a culture supportive of wellness, improve employee morale and sense of community, and offer learning opportunities and practice for students. The goals specific to employees were to connect values with actions, decrease sedentary behavior, increase physical activity, improve dietary habits, increase the opportunity for social interaction, reduce stress, and improve overall physical and mental health, and well-being. To illustrate fidelity, the original goals were aligned with intervention strategies and assessments according to the predetermined levels of a SEM. (See Chapter I, Table 13).

*Supervisor Interviews and Discussion Groups.* During the development of *Wellcats* discussion groups and interviews were conducted from which themes were drawn and used to establish program goals. To investigate whether or not the themes were effectively addressed, seven discussion groups and six interviews of supervisors were conducted with the questions (with minor adjustments for relevance) used for initial development.

The participants for the discussion groups and interviews were similar to the original pool. An author and two note-takers facilitated the discussion groups and interviews. After all seven discussion groups and six interviews were conducted, notes were compiled and qualitative feedback was summarized and reviewed for common themes. The themes were compared to the goals developed from feedback gathered during initial development.

### *Statistical Analysis*

One purpose of this study was to evaluate program effectiveness of *Wellcats* after the first year of implementation using financial metrics. To this end, independent samples *t*-tests ( $p < .05$ ) were used to compare the total and per person wellness leave, sick leave and associated costs between calendar year 2014 and 2015. To further examine the programmatic effect on sick leave and wellness leave, the hours and cost were compared between *Wellcats* members and non-members using independent samples *t*-tests ( $p < .05$ ).

## RESULTS

### *Program Effectiveness*

*Sick Leave.* In 2014, 2239 benefits eligible employees took 175, 504.39 hours of sick leave, while in 2015, 2304 benefits eligible employees took 166,634.86 hours of sick leave. For those same years, the associated cost of sick leave was \$4,657,437.80 and \$4,444,713.28, respectively. While the number of employees taking sick leave increased by 3%, the number of hours of sick leave and associated cost decreased by 5% and 5%, respectively. The sick leave hours per employee decreased in calendar 2015 compared to 2014 by 8% ( $t=2.110$ ,  $df=4541$ ,  $p=.009$ ). There was a 7% decrease in the associated cost of sick leave per employee between calendar years 2014 and 2015 ( $t=1.327$ ,  $df=4541$ ,  $p=.026$ ).

*Wellness Leave.* In 2014, 177 benefits eligible employees took 4,330.35 hours of wellness leave while in 2015, 308 benefits eligible employees took 6340 hours of wellness leave. For those same years, the associated cost of wellness leave was \$116,346.78 and \$178,623.74, respectively. The number of employees taking wellness leave increased by 74%, this was a 46.4% increase in wellness leave hours and a 53.5% increase in associated cost of wellness leave in 2015 compared to 2014. When expressed in relative terms, there was no difference in the hours of wellness leave or associated cost per employee between calendar years 2014 and 2015 ( $p>.05$ ). (See Table 14).

Table 14

*Difference in Sick Leave and Wellness Leave between 2014 and 2015*

				Overall	%
		2014	2015	Difference	Difference
Sick	N	2239	2304	65	3%
Leave	Total Hours	175,504.4	166,634.9	-8,869.5*	-5%
	Hours/Employee	78.4	72.3	-6.1*	-8%
	Total Cost	\$4,657,437.8	\$4,444,713.3	-\$212,724.5*	-5%
	Cost/Employee	\$2,079.2	\$1,929.1	-\$150.1*	-7%
Wellness	N	177	308	131	74%
Leave	Total Hours	4,330.4	6,340	2,009.7	46.4%
	Hours/Employee	24.5	20.6	-3.9	-15.9%
	Total Cost	\$116,346.8	\$178,623.7	\$62,276.96	53.5%
	Cost/Employee	\$657.3	\$579.95	-\$77.4	-11.8%

\* $p < .05$

To examine the programmatic effect on sick leave and wellness leave, the hours and cost were compared between *Wellcats* members and non-members. In 2014, non-members used more

sick leave hours ( $t=.971$ ,  $df=2237$ ,  $p=.005$ ) and accrued more cost of sick leave ( $t=1.083$ ,  $df=2237$ ,  $p=.009$ ) per employee. In 2015, non-members used more sick leave hours ( $t=.564$ ,  $df=2302$ ,  $p=.007$ ) and accrued more cost of sick leave ( $t=.793$ ,  $df=2302$ ,  $p=.018$ ) per employee. In 2014, non-members used more wellness leave hours ( $t=1.581$ ,  $df=175$ ,  $p=.029$ ) and accrued more cost per employee ( $t=1.64$ ,  $df=175$ ,  $p=.018$ ) than *Wellcats* members. In 2015, non-members used more wellness leave hours ( $t=1.536$ ,  $df=306$ ,  $p=.020$ ) but accrued relatively the same cost of wellness leave as *Wellcats* members. (See Table 15).

Table 15

*Year to year Differences in Sick Leave and Wellness Leave between Wellcats Members and Non-members*

		Member			Non-member		
		2014	2015	Difference	2014	2015	Difference
Sick Leave	N	339	368	29	1,900	1,936	36
	Hours/employee	73.16	70.03	-3.13	79.32	72.76	-6.56
	Cost/employee	\$1,860.49	\$1,792.35	-\$68.14	\$4,323.34	\$1,955.13	-\$2,368.21
Wellness Leave	N	70	161	91	170	147	23
	Hours/employee	20.54	18.5	-2.04	27.03	22.86	-4.17
	Cost/employee	\$521.54	\$526.25	4.71	\$746.16	\$638.76	-107.4

*Interests Survey.* Biomedical, behavioral, and biopsychosocial outcome variables were obtained from a campus-wide survey administered in 2015. Participants were given the option of choosing “I prefer not to answer” for many questions; therefore, the percentages reported are relative to the sample size for each question.

With regards to age: 10.86% were 20-29, 19.62% were 30-39, 24.22% were 40-49, 28.81% were 50-59, 15.45% were 60-69, and 1.04% were 70+ years of age; BMI: 2.09% were

underweight with a BMI of less than 18.5 (kg/m<sup>2</sup>), 36.28% were normal weight with a BMI between 18.5 and 24.9 (kg/m<sup>2</sup>), 31.4% were overweight with a BMI between 25.0 and 29.9 (kg/m<sup>2</sup>), and 30.23% were obese with a BMI of at least 30.0 (kg/m<sup>2</sup>); workload: 96% were full-time and 4.0% were part-time; work classification: 29.1% were faculty and 70.9% were staff; gender: 25.1% identified as male, 74.4% identified as female, and 0.5% identified as other; *Wellcats* membership status: 44.5% were currently members, 5.4% were former members, and 50.1% had never been members.

The majority of all survey participants perceived themselves to have “good” health, however, the majority of those who had never been a member perceived themselves to have “fair” health while a majority of current and former *Wellcats* members perceived themselves as having “good” health. (See Table 16). On average, survey participants perceived *Wellcats* to be a valuable employee benefit, important to be offered to coworkers, an effective way of enhancing a sense of community, and was supported by the immediate supervisor in adopting healthier lifestyles (mean > 4.00, agree). The majority of survey participants who had never been a member believed *Wellcats* to be a valuable employee benefit, important that it be offered to coworkers, and an effective way of enhancing community. (See Table 18). Further, survey participants who had never been a member reported the least amount of support from immediate supervisors in adopting healthier lifestyles. (See Table 18).

Table 16

*Difference in Self-Perceived General Health between Membership Statuses (n=422)*

How do you		Excellent	Good	Fair	Poor
perceive	Total	22.7%	56.4%	19.4%	1.4%
your general	Current	21.57%	56.86%	20.10%	1.47%
health?	Former	16.13%	64.52%	19.35%	3.23%
	Never	21.16%	19.09%	58.09%	1.66%

Table 17

*Difference in Self-Perceived Change in Health between Membership Statuses (n=425)*

Has your		Improved	Unchanged	Worsened
overall health	Total	39.80%	49.90%	10.40%
changed in the	Current	54.15%	38.54%	7.32%
last year?	Former	25.00%	50.00%	25.00%
	Never	27.42%	59.27%	10.89%



Table 18

*Mean Level of Agreement with Program Perceptions of Culture of Health (scale of 1 (strongly disagree) to 5 (strongly agree))*

Perception	n	Mean Level of Agreement			
		Total	Never	Former	Current
<i>Wellcats</i> is a valuable employee benefit.	430	4.34	3.28	4.31	4.56
<i>Wellcats</i> has positively influenced my health.	429	3.69	1.75	2.94	4.29
It is important that <i>Wellcats</i> is offered to my coworkers.	428	4.38	3.64	4.56	4.67
<i>Wellcats</i> is an effective way for enhancing a sense of community.	429	4.07	2.96	3.94	4.34
Healthy lifestyles are supported in the workplace.	430	3.72	3.26	3.25	3.76
My immediate supervisor supports employee's efforts to adopt healthier lifestyles.	430	4.05	2.27	4.03	3.67
In my work group, there is no such thing as being "too health-oriented."	425	3.97	3.49	3.66	4.13
Living a health lifestyle is highly valued in our work group.	427	3.79	3.39	3.55	3.94

### *Intervention and Theory Fidelity*

*Theory Fidelity.* The original goals were aligned with intervention strategies, and assessments at the predetermined levels of the SEM (See, Chapter I, Table 13).

*Supervisor Interviews and Discussion Groups.* Seven discussion groups consisting of employees and six interviews of supervisors were conducted to assess whether the feedback gathered during development was effectively used to design the interventions and meet the needs of employees. Tables 19-21 summarize the information collected from the discussion groups and interviews.

Table 19

*Summary of Feedback from Discussion Groups (n=37)*

Question	Summary
1. Does your department promote and support wellness? If so, how?	Employees feel wellness is generally supported within departments (Yes (75.7%), No (21.6%), Not Applicable (2.7%)).
2. Does your department orient new employees to campus wellness resources? If so, how?	Most departments do not orient new employees to wellness resources (Yes (35.1%), No (35.1%), Not Applicable (29.7%)).
3. On a scale of 1-10, how supportive do you believe the university is in supporting <i>your</i> overall health (with 10 being very supportive to 1 being not supportive at all)?	Most employees feel the university is supportive of their overall health (mean=8.09, SD=1.73).
4. Are you familiar with the wellness policy?	Most employees are familiar with the wellness policy (Yes (67.6%), No (29.7%), Not Applicable (2.7%)).
5. Does your supervisor encourage you to use wellness time?	The majority of employees are encouraged by their supervisors to use wellness time (Yes (59.5%), No (35%), Not Applicable (5.4%)).
6. Do you use wellness time? Why or why not?	Most employees do not use wellness time due to workload, scheduling constraints, not enough time to shower after exercise (Yes (32.4%), No (64.9%)).
7. On a scale of 1 to 10, with 10 being very familiar and 1 being not familiar at all, how familiar are you with <i>Wellcats</i> and its services?	Employees are moderately familiar with <i>Wellcats</i> (mean=6.44, SD=3.31)
8. Do you participate in any wellness-related activities (through <i>WellCats</i> and/or on your own)? If so, what and where?	Most employees report participating in wellness activities (Yes (72.9%), No (27%)).

Table 19- Continued

Question	Summary
9. What do your coworkers think about your participation in worksite-related activities?	The majority of employees feel coworkers are supportive of wellness participation (Yes (45.9%), No (2.7%), Not Applicable (37.8%)).
10. If you currently participate in worksite wellness-related activities on campus, has it impacted your health, your job performance, attitude, etc.? If so how?	Participating improves mood, boosts energy level, and relieves stress (Yes (45.9%), No (2.7%), Not Applicable (45.9%)).
11. What employee worksite wellness-related opportunities, activities, or services do you believe benefit you the most?	Group Fitness classes and Lunch n' Learns are believed to be the most beneficial.
12. What are some reasons/barriers why you or your coworkers are unable to participate in <i>Wellcats</i> ?	Barriers to participation include time constraints (18); motivation, workload, understaffed, and inconvenience.
13. If you do not participate in worksite wellness-related activities, what would get you to participate in <i>WellCats</i> ?	More time, competitions, challenges, incentives, motivational stories, and top-town support would increase participation.
14. Is your wellness one of your priorities? Why or why not?	The majority of employees make wellness a priority (Yes (62.2%), No (13.5%)).
15. How do we help employees make wellness one of their priorities?	Top-down support.

Table 20

*Summary of Feedback from Supervisor Interviews (n=6)*

Question	Summary
1. How many employees do you supervise (direct and indirect reports, number of employees in the division/department that you oversee)?	Together, the supervisors interviewed oversee approximately 1605 employees.
2. How would you describe the health of your employees as a whole?	Most (5 out of 6) describe the overall health of their employees as average or good with the exception of a few cases of major illness.
3. Does your department promote and support the wellness of its employees?	Most (5 out of 6) actively encourage participating in wellness activities by initiating challenges, encouraging the use of wellness time, having walking meetings, and sets an example by participating themselves.
4. Does your department orient new employees to campus wellness resources? If so, how?	All (6 out of 6) rely on new employee orientation to introduce employees to wellness resources
5. On a scale of 1-10, how supportive do you believe the university is in supporting <i>your</i> overall health (with 10 being very supportive to 1 being not supportive at all)?	Mean = 7.5, believe the university is supportive of health.
6. In your opinion, do you believe that participation in an employee wellness program affects the productivity and health of employees? If so, how?	All (6 out of 6) believe participating in wellness activities positively influences the productivity and health of employees by making them more alert.
7. Are you familiar with UPPS 04.04.32: the Texas State Wellness Program?	Most (5 out of 6) were familiar with the UPPS.
8. Are there barriers to implementing/following this UPPS? If so, what?	Workload, time restraints, and understaffing were considered barriers to implementing the UPPS.

Table 20- Continued

Question	Summary
9. On a scale of 1 to 10, with 10 being very familiar and 1 being not familiar at all, how familiar are you with <i>Wellcats</i> and its services?	Mean = 3.5, not familiar with <i>Wellcats</i> components.
10. Do you participate in any wellness-related activities (through <i>WellCats</i> or on your own)? If so, what and where?	Most (5 out of 6) participate in wellness activities on their own.
11. What can you do to help us promote <i>Wellcats</i> and engage you and your employees in the program?	Employees could be more engaged in <i>Wellcats</i> through more convenient time slots, desk exercises, receiving reminders at meetings, and competitions/challenges.
12. How can we make the healthy choice the easy choice for you and your employees?	The healthy choice can be the easier choice by finding a way to track what employees are participating in outside of the program, offer more appealing/diverse options, recruit wellness advocates, offer healthy food choices on campus, and offer online workout and nutrition tips.

Table 21

*Comparison of Feedback between Discussion Groups and Supervisor Interviews*

Consistencies	Inconsistencies
University is supportive of employees individual health	Supervisors participate in wellness activities outside of the program where most employees participated in wellness through <i>Wellcats</i> (if at all).
Familiar with wellness policy	Employees were more familiar with all the components of <i>Wellcats</i> than supervisors.
Did not receive orientation to wellness resources.	
Believe participating in wellness positively influences productivity.	
Reported the major barriers for taking advantage of wellness time to be time constraints, workload, and understaffing.	
Reported that competitions and challenges would help motivate employees to participate in wellness activities.	

## DISCUSSION

*Program effectiveness*

One purpose of this study was to evaluate the effectiveness of a comprehensive EWP at a large university after the first year of implementation. Program effectiveness was determined using financial and biopsychosocial metrics. The financial metrics measured were differences in the amount of sick leave and wellness leave taken by staff members at the university. The differences in sick leave, wellness leave, and associated costs were compared year to year. To further screen for a programmatic effect, year-to-year changes in sick leave, wellness leave, and associated costs between *Wellcats* members and non-members were compared.

Even though *Wellcats* is in its infancy, and a VOI-based program, cost-savings emerged. The decrease in total and per employee sick leave hours and sick leave costs from 2014 to 2015 is surprising, as most programs do not result in financial changes within the first five years of implementation (Fitch, 2008; Mattke et al., 2001; Mukhopadhyay & Wendel, 2013). Further, despite an increase in wellness leave, there was a net savings of approximately \$150,000. This finding is especially promising considering that the cost of the program was only \$75,000. While these findings are unexpected and promising, it is important to note the limitations of measuring sick leave. Only staff members record sick leave and some may use vacation time or not report leave at all. Further, in the last year, there was a 6% increase in the salary budget line, likely reflecting a combination of increased individual salaries and additional staff and faculty. Finally, age was not factored into the comparison of differences in sick leave. For example, if the average age of the workforce decreased from 2014 to 2015, it may have influenced the amount of sick leave taken.

In regards to differences in wellness leave, it was expected that *Wellcats* members would take advantage of wellness time more than non-members. However, the results revealed that on average, non-members used more wellness leave than members in both 2014 and 2015. There is currently no way of knowing how non-members are utilizing wellness time.

In addition to sick leave and wellness leave, biopsychosocial variables were used to assess employees' perceptions pertaining to the culture of health. Differences in perceptions are invaluable in assessing the success of a VOI-based program, especially in the first years of a program when other variables (i.e. biomedical, behavioral, and health outcomes) have not had enough time to respond (Fitch, 2008). Research questions embedded within an interests survey revealed differences in perceptions between *Wellcats* members and non-members. When asked

how survey participants perceived their overall general health, 56.4% of *Wellcats* members believed they were in “good” health where only 19.09% of non-members believed they were in good health. The majority of *Wellcats* members believed they were in “good” health where the majority of non-members believed they were in “fair” health. When asked how one’s overall health had changed within the last year, 54.15% of *Wellcats* members believed their health had improved where only 27.4% of non-members believed their health had improved. These findings are especially telling as how one perceives his or her health is more predictive of mortality than actual health condition (Mossey & Shapiro, 1982).

Of the survey participants, even those who had never been a member agreed that *Wellcats* is a valuable employee benefit, important that it be offered to coworkers, that healthy lifestyles are supported in the workplace, that there is no such thing as being “too health-oriented,” and living a health lifestyle is highly valued. These perceptions suggest that even non-members have been positively influenced by *Wellcats* and the culture of health is conducive to pursuing activities that promote wellness. Even without the evidence of a positive programmatic effect on financial metrics, the assessment of the biopsychosocial variables suggests that, as a VOI-based EWP, *Wellcats* was successful in fostering a culture of health and wellness in its first year of implementation.

### *Fidelity*

The second purpose of this study was to evaluate the fidelity of the theory and interventions used to design the EWP. *Wellcats* is a theory-based program following the SEM to address the levels of behavioral influence an employee of a university may experience. Attending to theory fidelity increases the likelihood that: 1) behavior change will occur and 2) programs are appropriately assessed and not prematurely terminated (Fitch, 2008).



The SEM accounts for the various levels of influence one may experience, thereby shaping behaviors (Bronfenbrenner, 1981; Brown, 2015). To assess the use of the SEM to design *Wellcats* ( i.e. the fidelity) assessments were aligned to the levels of influence, goals, and interventions. (See Table 13). Every level of influence was aligned with at least one goal. However, not every goal was met with an intervention or specific assessment. For example, one of the main program goals was to reduce stress. While there were multiple interventions aimed toward stress reduction, such as the health behavior change coaching, Lunch n' Learn topics, Strength, Stretch, No Sweat! group exercise classes, yoga, and non-pretzel yoga, there was no measurement of stress reduction apart from a stress-energy questionnaire on an annual *Wellcats* membership survey. An overarching program goal was to increase presenteeism of employees, however no specific assessment was performed to capture that effect. Filling the gaps in alignment of goals, interventions, and assessments can improve the theoretical and intervention fidelity of EWPs.

Employee discussion groups and supervisor interviews were held to triangulate the data gathered from the interest survey and previous group meetings held during the development of *Wellcats*. Interactions and discussions with employees and supervisors in these meetings revealed some inconsistencies. The discussion group participants were more familiar with various components of *Wellcats* than the supervisors. All but one of the six supervisors reported participating in wellness activities on their own, however, only one of the supervisors was a member of *Wellcats*. There seemed to be a disconnect between the values and actions of two of the supervisors, as they valued productivity and the health of their employees, but did not promote wellness or *Wellcats* as they did not feel it met their personal needs. In another case, one supervisor believed that his or her own participation in the wellness activities set an example and

modeled balance for employees to follow. While a EWP may never meet the desires of all employees (Fitch, 2008), there can be a way to and commend employees who are engaging in efforts to improve wellness on their own. From the supervisor interviews came the idea of having wellness advocates or an honorary *Wellcats* membership to engage employees who are supportive of wellness and health.

The theme of “top-down” support appeared several times in the feedback from the discussion groups as a barrier to participation and necessary for helping make wellness a priority. The addition of a wellness advocacy role or an honorary membership might increase the approachability of supervisors and co-workers alike to engage in dialogue concerning wellness and provide support in pursuing healthier lifestyle choices. Further, with the option of an honorary membership, participants could receive more information and have access to the *Wellcats* resources, thereby increasing their likelihood of participation.

The discussion group participants and supervisors were mostly in agreement in terms of the university’s overall support of the individual employee, and there was an understanding of how participation in wellness activities positively influences productivity and health. The discussion group participants and supervisors were also in agreement concerning the major barriers to taking advantage of or approving wellness time, respectively. The major barriers of both taking advantage of or approving wellness time were time constraints, workload, and understaffing. This finding is ironic, as supervisors should be more inclined to approved wellness leave given that employee participation in wellness activities has been shown to reduce stress and increase productivity (Moxley, 1990). Efforts to better understand and to reduce the barriers of time constraints, workload and understaffing should be undertaken. When asked what might motivate employees to participate in *Wellcats* or wellness activities in general, both the

discussion group participants and supervisors proposed that competitions and challenges would help increase participation. This proposition warrants further investigation to see if competitions and challenges provide enough motivation to overcome the perceived barriers to participation in wellness activities.

In comparison to the discussion groups held during the development of *Wellcats*, there is evidence of a shift in the perceptions of the culture in the workplace. Some of the same barriers exist such as heavy workload expectations; however, the majority of employees now feel supported by supervisors and co-workers to take wellness time compared to the opposition they faced before. There is still a desire for more “top-down” support or for management to adopt and model healthy behaviors and publicly support employee engagement in wellness activities, and for the adoption of an orientation process to familiarize employees with available wellness resources.

Based on the alignment of levels of influence with goals, interventions, and assessments one can conclude that *Wellcats* was developed and implemented with high theory fidelity. The overarching goals, qualify *Wellcats* as a VOI-based program. By more clearly defining the values of the program, the goals, interventions, and assessments may be better directed (Kent, Goetzel, Roemer, Prasad, & Freundlich 2016).

## CONCLUSION

*Wellcats* is a VOI-based EWP with the ultimate goal of fostering a culture supportive of health and wellness. The values served as the basis for program design following the SEM, a health behavior change theory. After the first year of implementation, there was evidence of positive financial and biopsychosocial impact. At the writing of this study, there were no standardized procedures or reports evaluating the fidelity of theoretical approaches taken by

EWP practitioners. This study aimed to highlight the importance of attending to fidelity, as viable EWPs, and the theories used may be prematurely deemed ineffective when in actuality, theories were not applied appropriately. By continuing to attend to theoretical and intervention fidelity, future investigations of a more financial, biomedical, and behavioral nature might reveal further evidence of program effectiveness and increase the likelihood of mitigating health care costs.

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