Maker Meaning: An Exploration of the Maker Movement, Career Adaptability, and Life Satisfaction

By

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Abstract

Throughout history work has provided meaning for people by defining the role of each individual in relation to the greater society. The new normal is not a career that will last a lifetime but instead a career path through a series of transitions. This study sought out to explore how the Maker Movement might be important to career development in this new climate of unpredictability specifically with regard to career adaptability, engagement, and life satisfaction. Given the lack of information about the characteristics and motivations of those participating in the Maker Movement, descriptive data was also gathered.

Participants included 182 individuals, over the age of 18, who have participated in the Maker Movement. Participants took online assessments that included a demographic form, the Career Adapt-abilities Scale - USA, the Occupational Engagement Scale for Employed Adults – Revised, and the Making as Meaning Inventory.

Consistent with prior research, it was found that Makers tend to be White, to hold a college degree, to be employed, and to have a mean personal income of roughly $54,000. This study found that women are participating in the Maker Movement at equal rates as men, contrary to previous findings. Additionally, Makers are more likely to engage with a Maker Faire or online, than at a Makerspace. No relationship was found between Maker participation and career adaptability or occupational engagement. However, meaning from Making was associated with higher life satisfaction. This research revealed meaning from Making as an important aspect of life, and is echoed by Makers, “Making is a way to make life meaningful.”

Keywords: career adaptability, life satisfaction, Maker, Maker Movement, meaning from Making, occupational engagement

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Chapter 1: Introduction to the Study

Psychologists, anthropologists, and philosophers alike insist that work has always played an important role in human life. Throughout history, work has helped to provide meaning for people by defining the role of each individual in relation to the greater society (Steger & Dik, 2010). Millers did mill, Smiths shaped metal, and the Farmers farmed. Such roles, and labels, were essential to survival, connection, and identity. If the world of work has drastically changed, how has the meaning found through work changed?

Between 1950 and 2000, the United States' (U.S.) population nearly doubled. Factoring in the decline of U.S. manufacturing and the growth in the service sector, the distribution of workers in the workforce has been profoundly reshaped. This new workforce includes more women, ethnic minorities, older Americans, and people born outside of the U.S. (Population Reference Bureau, 2008). Within the past 15 years, additional shifts have occurred in the world of work. An increasing number of people are working for themselves; work-life balance has become more of a priority for individuals; the nation is seeing long-term unemployment; and digital advances have shifted the way modern society engages in work (Grant, 2011). Like many changing things in this new digital-technology world, workers are fighting to keep up with the morphing world of work. Gone are the days of a lifetime career. The Bureau of Labor Statistics (2015), now reports the average person is holding 11.7 jobs between the ages of 18 to 48. With 11.7 different positions, the salience of identity from a single work-role cannot be as strong. Instead of milling, now the Millers teach, work on cars, run companies, and clerk. In such a variable state of work, individuals are finding it necessary to approach vocation in an adaptable manner.

As the career world moves from stable to unpredictable, people must adapt from finding a single career to navigating a lifetime shifting career path. Career decision-making once focused on matching a person to the single perfect career but now it is about being flexible within a transitioning market world (Krieshok, Black, & McKay, 2009). In 1997, Holland wrote about typical job moves that included minor or related job changes but not the frequent movement that occurs today. At that time, he explained that drastic job changes are difficult to achieve without significant support. However, in the present economy individuals are frequently asked to leave a field entirely, with little to no support for finding a new career. The traditional models used to assist career decision making no longer fit.

Given the changing vocational system, career adaptability was introduced by Savickas in 1997 and was inspired by a functional approach to answer the questions "What do people do?" and "Why do they do it?" This adaptive process simply stated, "they adapt in an effort to better implement their self-concepts in their situations (p.253)." Simply, people adapt to find congruence between self and work. Further theory development would define career adaptability as, "a psychosocial construct that denotes an individual's readiness and resources for coping with current and imminent vocational development tasks, occupational transitions, and personal traumas (Savickas, 2005, p. 51)." Career adaptability is the individual's capability to better navigate the chaotic world of work with perhaps a convenient byproduct of searching for meaning.

Occupational engagement theory also brought to light a better understanding of the new paths taken to develop and foster the relationship between an individual and work. Krieshok and colleagues (2009), define occupational engagement as "taking part in behaviors that contribute to the career decision-maker's fund of information and experience of

the larger world, not just the world when a career decision is imminent" (p. 284). Occupational engagement is expected to inform the decision-making process and not just service the need of a specific career decision. Occupational engagement is broken into two subcategories: job curiosity and job involvement. Job curiosity is the extent a person is inquisitive about other job possibilities and engaging in behaviors to learn about other job options. This is related to occupational engagement in that a person is specifically seeking out an alternative or a new career option. As such, job curiosity may be higher in times of transitions and may look like someone who is searching for job possibilities by using the Internet. Comparatively, job involvement relates to the activity of an individual that is engaging in tasks already in his/her current field. A person who scores high on this factor may display behaviors like attending conferences or workshops related to his/her career (Scott, 2006).

In addition to modifying decision making models, vocational psychologists have made a call to action to adapt the way one's relationship to work is conceptualized to better fit the new chaotic world of work. Once thought of as a selection process related to interest and skills, the selection of work must also be thought of as a survival and access pairing. At times individuals must take the work that is available and therefore, are unable to consider interest or enjoyment. The privilege to pursue a calling, and meaning through the relationship to society from work, is not available to everyone (Richardson, 2012).

Fortunately, much like the world of work is changing, the way work is talked about is also evolving. Market work, or work for pay, is the traditional way most individuals conceptualize work. This is often treated as the only work of value. In that manner, personal-care work is described as the care of self, dependent others, relationships, and communities (Richardson, 2012). This work provides social value and is often done with a lack of monetary

compensation. Throughout history women have largely been the contributors of personal-care work, and thus have suffered through the devaluing consequences of the traditional work concept. It is now argued that contributions of social good are necessary for economic production. Additionally, personal-care work, such as mentoring or volunteering, has been found to provide identities for individuals through meaning and purpose (Thoits, 2012). This new perspective of equally valuing economic and social work can help to provide access to meaningful work for groups previously discriminated against.

Psychologists must critically consider the benefits one might miss if the pursuit of a calling, or meaning through work, is blocked. Steger and Dik (2010), believe that when an individual is participating in meaningful work he/she is more likely to have a better understanding of self, personal purpose, take on leadership, and produce high work efficiency. Furthermore, work has been found to be protective in recovering from mental illness. Perhaps work also provides a broader social connection for individuals and/or provides a sense of accomplishment (Blustein, 2008). Those without the privilege to pursue meaningful work are without access to these fringe benefits.

This new conceptualization states that work done without economic compensation, and social value can contribute to meaningful work, but what else might help to find meaningful work? Frequently, a calling is thought of as meaningful work, perhaps reaching meaning to the highest extent for an individual. Dik and Duffy (2009), incorporate meaningfulness, social value, and a transcendent summons as the components of a calling. What is not a necessary part of the calling definition is a base rate of income. Anecdotally, this makes sense. Teachers, nurses, artists, and social workers commonly speak of their occupations as callings and yet the ratio of

monetary compensation to effort is often questioned. Additionally, stay-at-home parents, and volunteer workers will make mention of their calling and they receive no payment.

As the work market continues to change, and the field of psychology attempts to re-conceptualize a person's relationship to work, new ways to engage in meaningful work are needed. One of the newest ways that people have been engaging in meaningful work has been accomplished by joining together with other people in designing, inventing, and creating. Individuals around the world have begun participating in the Maker Movement. This research study hopes to explore the make-up of the Maker Movement, how it might relate to meaning-making, and how it might relate as a part of one's relationship to work.

The Maker Movement refers to a global do-it-yourself (DIY) community that formed in order to combine cutting-edge technology with people's desire to create things in a hands-on way. The term "Maker" refers to innovators, artists, engineers, and tinkerers in this technology-driven DIY movement. Makers are self-labeled and identification is the only cost of entry into the movement. The start of the Maker Movement as we know it today, began around 2005 with the launch of "Make" magazine by Dale Dougherty, followed by the first Maker Faire held in San Francisco in 2006. Today, there are nearly a thousand Makerspaces (shared spaces for innovation and production) around the world (Anderson, 2012). The Maker Movement is meant to empower people of all ages to create, innovate, tinker, and turn their ideas and solutions into reality. Makers participate in work as innovators and entrepreneurs keeping society moving forward and help to solve global dilemmas. Their contributions are valuable commodities and when society encourages people of all ages to engage their interests and develop their talents it is of benefit to us all.

Finding its ancestry in home economics, shop class, sculpture, and chemistry lab, the Maker Movement is returning work to a hands-on experience, calling for people to engage in development through design (Anderson, 2012). Kalil (2010), describes the Maker mindset as "empowering people not just to seek out jobs in STEM or creative fields, but to make their own jobs and industries, depending on their interests and the emerging needs they see in rapidly changing society." The Maker Movement provides "shape" to the invisible ladder for reaching careers once left uncharted. This pursuit becomes even more accessible because the Maker Movement does not require financial compensation for membership. A Maker can join the community and begin to explore new industries without a fee.

As founder Dougherty (2013) says, most people won't claim to be an inventor, but are happy to claim the label Maker. Currently, approximately 135 million U.S. adults participate as Makers, this represents 57% of the U.S. populations over 18. Notably, those who are participating have contributed $29 billion annually into the economy (Owyang, 2014) and are contributing to changing the face of industry. Additionally, the recent rise of the Maker Movement has drawn national attention broadcasting the levels of achievement innovative-people can attain when provided with adequate resources and a supportive creative community. In 2012, the Obama administration announced an agenda to bring Makerspaces, complete with 3-D printers and laser cutters, into 1,000 U.S. schools by 2016. Government support of the Maker Movement continued to grow with the first White House Maker Faire being held on June 18, 2014. President Obama issued a call to action that "every company, every college, every community, every citizen joins us as we lift up Makers and builders and doers across the country" (The White House Office of the Press Secretary, 2014). In the 2014 fiscal year, the National Science Foundation invested $2.5 million in Making-related activities and research.

Chris Anderson, CEO of 3D Robotics and a leader in the Maker Movement, explains "today the Maker Movement is where the personal computer revolution was in 1985 – a garage phenomenon bringing a bottom-up challenge to the ruling order of the time" (Anderson, 2012, pp. 21-22).

Beyond contributing to the economy, Makers are meaning making. In the current economy, many people find themselves working in jobs where they never see the results of their work and do not participate in activities they consider meaningful. Making allows people to shape materials and data in their own ways, becoming personal manufacturers. In addition, Makers have the pleasure of having an end product. Making not only allows for personal creativity, but opens up the possibility for collaborative opportunities within a supportive community (Kerr, & Farmer, 2014). The creation of something original as work has the ability to reach the status of a calling, providing meaning and social value through a transcendent summons. Within the Maker Movement you can be the creator of your experiences.

Given the ease of entrance to the Maker Movement, it may be that marginalized people are able to use Making as a means of career development. With the new and unpredictable world of work people benefit from the ability to demonstrate career adaptability (Johnston, 2016). Are career variables such as adaptability, engagement, and life satisfaction influenced by marginalized status?

While the Maker Movement has grown by recruiting participants, little development has occurred through academic investigation of the possible impact of this movement. One area of interest surrounds the possibility of how the Maker Movement can be important to career development. Because most studies of Makers have only addressed the most basic information such as prevalence of the phenomenon of Making and the demographics of the movement, more

in-depth information is needed about the relationship of Making to career development. It is important to understand how individuals actually participate in the Maker Movement, and the extent of participation. It is important to know how participation in Making might contribute to career adaptability and engagement. Most important of all, beyond the vocational aspects of Making, is the issue of life satisfaction through meaning. Does being a Maker contribute, overall, to life satisfaction? This study will investigate the answers to the following questions.

Research Questions

Question 1.

Beyond those attending Maker Faires, there is a lack of demographic information of those participating in the Maker Movement. This study will explore who is participating in the Maker Movement. What is the Maker composition in respect to age, gender, ethnicity, personal income, level of education, and employment status?

Question 2.

Additionally, part of an initial understanding of the roles and identities Makers take on this study will investigate how Makers self-identify their membership (i.e., Maker identity, Pro-Maker status, student, mentor, sponsor, and/or creator).

Question 3.

Are marginalized groups (e.g., non-male, ethnic minority, lower socioeconomic status) participating at equal levels as non-marginalized groups?

Question 4.

Given that there are several pathways for Maker participation, it is important to understand the differences in participation for each mode. This study will compare three modes

in terms of amount of participation. Through which avenues are individuals accessing the Maker Movement (e.g., Maker Faires, Makerspaces, online)?

Question 5.

The relationship between Making and work is proposed. Therefore, this study examines if level of participation in the Maker Movement relates to career adaptability? If so, are these findings consistent across marginalized groups (e.g., non-male, ethnic minority, lower socioeconomic status; Blustein, 2001; Walsh, 2001)?

Question 6.

Similarly, occupational engagement may contribute to an individual's ability to make career decisions in the world of work (Krieshok, Black, & McKay, 2009). Again, we seek to understand if underserved populations interact similarly with occupational engagement (Blustein, 2001; Walsh, 2001). Does level of participation in the Maker Movement relate to occupational engagement? If so, are these findings consistent across marginalized groups (e.g., non-male, ethnic minority, lower socioeconomic status)?

Question 7.

While work and life satisfaction do not display a consistent relationship (Steger, & Dik, 2012), meaning from work is connected to life satisfaction (Hirshchi, 2011a). Does more participation in the Maker Movement relate to higher levels of life satisfaction? Does meaning from Making have a stronger relationship to life satisfaction? Finally, does Pro Maker status (Making for money) influence the relationship between meaning from Making and life satisfaction?

Chapter 2: Literature Review

The New World of Work

Unpredictability.

The world of work has become ever changing. While consistency remains a vocational factor relating person to work-environment (Gysbers, Heppner, & Johnston, 2009), the work-environment no longer remains consistent. Psychologists and workers alike seek to optimally navigate this new world of work. In a special issue of the *Journal of Career Development* focusing on the new career era, researchers presented a call to action stating "career development research [should] take a more context-dependent approach, that is, how are career development relationships affected by the economic context, cultural background, job type, and so on …. for example, how is career success and life well-being related (McElroy, & Weng, 2016, p. 8)." Therefore, to better adapt one must examine the holistic relationship between person and the new world of work.

During the 1990s the world of work saw a boom in job market availability. Then a quick shift between the late-1990s to the mid-2000s experienced historic lows of unemployment (U.S. Bureau of Labor Statistics, 2013a). This instability and new terrain of the job market left individuals feeling ambivalent towards career desires and plans (Hall, 1996). Additionally, the workplace has seen large-scale restructuring as a result of the expansion of digital technology, globalization, free trade, and mergers, all of which shift job-type availability. Furthering the instability, the Bureau of Labor Statistics (2015) reports the average person is now holding 11.7 jobs between the ages of 18 to 48. A person can no longer expect to follow the simple model of following a single career, working hard and performing well, to guarantee monetary rewards and job security.

The digital world.

Perhaps the most notable change in the past 20 years is the revolution of the digital word bringing the rapid acceleration of the knowledge-based economy. While the creation, gathering, and sharing of knowledge has occurred since the beginning of man, the rate at which these are now occurring has increased exponentially. Such developments have restructured the workforce towards jobs of intangible capital: producing, processing, and educating.

Excitingly, the transformation of being "online" has allowed once isolated innovations to breakthrough. Now, because of digital technology people can easily share information and skills, and refine their abilities. In exploring the boom of a knowledge-based economy researchers in economics state, "the 'need to innovate' is growing stronger as innovation comes closer to being the sole means to survive and prosper in highly competitive and globalized economies (David, & Foray, 2002, p.11)." In addition to these changes, abilities required to perform jobs have changed. Broad critical thinking skills are now more valuable than the ability to perform a specialized task. Vital generic learning abilities include: the ability to learn, the ability to know what in not yet known, the ability to anticipate change, the ability to recognize biases and limitations, teamwork, and communication (David, & Foray, 2002). Workers must evolve with these abilities to keeps up with the chaotic world of work.

The labor force.

Much like the environment of work has changed, the make-up of the workforce has also morphed. An increase in cultural diversity, in life expectancy, and in acceptance of varied family structures have changed who is active in the workforce (Gysbers et. al., 2009). A larger workforce has produced mixed consequences including: competition for productivity, instability,

self-employment, greater work/life complexity, tele-work, and greater income disparity between workers and managers (Amundson, 2006).

Furthermore, millennials are making their impact. The baby boomer generation reshaped the workforce in the 1970s, and now it is expected by the year 2020 millennials will make up 46% of the U.S. workforce (U.S. Bureau of Labor Statistics, 2013b). While Millennials are surely responding to the current state of work, including high levels of personal debt and unemployment, they are also likely contributing to the shift in the conceptualization of a career. For example, this generation came of working age during the "Great Recession" and therefore approach salary levels from a utilitarian perspective rather than a maximizing perspective (O'Connor & Raile, 2015). Millennials also helped shape the new culture of work and have been found to value higher job satisfaction, job security for life-long benefits, and work-life balance, over status, salary, work centrality, and work ethic (Deal, Altman, & Rogelberg, 2010; Kowske, Rasch, & Wiley, 2010; Twenge, 2010). Additionally, this group of the workforce is less likely to accept organizational hierarchies and linear paths to advancement and define "real jobs" negatively. As a generation told, "you can be anything you want" Millennials provide a prime example of adapting to the wandering pathway of work (O'Connor, & Raile, 2015; Twenge, 2010).

The invisible ladder.

The market place transformed, the labor force transformed, and so the way individuals approach finding work transformed. Historically an individual would achieve upward mobility within an organization in a very linear process guided by monetary rewards and job security. Employees are now looking for career growth by taking advantage of the careers characterized by self-guidance not organizational-guidance, by continuous learning and development, and by

psychological success (Hall, 1996; McElroy & Weng, 2016). Given boundary-less careers and the prevalence of job mobility, success of an employee is no longer solely reliant on the organization (Savickas, 2011). In some ways the worker has more opportunities and freedoms for success up and around the invisible ladder than ever before. Unfortunately, invisible means little guidance leading to unmaterialized opportunities. But because there is a high perceived benefit of opportunity the constant need for transition can create instability in an individual's life and have adverse effects.

Career transitions.

The new normal is not of a career that will last a lifetime but the ability of a person to create a career path through a series of transitions (Bolles, 2011). While there is only a small body of research on career transitions and their consequences the field of vocational psychology has some initial findings (McElroy & Weng, 2016). Transitions occur due to both changes in the workforce and personal life. The reshaping of the knowledge-economy, and the recession have caused transitions for workers, including movement along the invisible ladder. As discussed, many societal factors contribute to instability and transitions such as downsizing due to recessions, outsourcing of employment, and changing family responsibilities such as the sandwich generation caring for parents and children (Gysbers, et. al., 2009).

Job loss (i.e., termination, layoff, downsizing) is an agonizing transition of concern. Of course, a loss of income can create stressors to meet life needs but many other hardships occur during job loss. A sense of structure can be lost. Interpersonal relationships can be effected due to a change in mood, or recreational income. Psychological consequences often include anxiety, anger, and frustration (Gysbers, et. al., 2009). Perhaps the most significant loss in times of forced job transition is the possible loss of identity. As it has been presented, historically individuals

turn to vocation for a large part of their identity. If the Millers no longer mill but they do teach their identity can be found in teaching. But what happens when the Millers no longer mill or teach? The continuous transitions of the new chaotic world of work pose a threat to the stability of meaning traditionally associated with vocation.

Meaning from Work

Meaning: a construct.

Meaning in life is thought to provide an understanding or patterning of experiences. Through meaning exploration an individual creates organization of what has occured; this process is a central element of well-being (Carlsen, 1988; Keyes, 2007). Meaning *in* work has been defined as a sense of coherence, direction, significance, and belonging in the working life (Schnell, Höge & Pollet, 2013). Meaning *of* work has been described as the significance and value which is attached to working as a major element of human activity (Harpaz & Fu, 2002).

Meaning and identity.

Work provides individuals with roles, practices, and resources within social institutions. This helps define social position and structures environments to help an individual live out values which shape practical identity. This identity can ground a sense of meaning in the world (Roessler, 2012). Work roles, social roles, and volunteer roles provide identities with purpose and meaning in life. These roles help to answer the question, “Who am I (Thoits, 2012)?” If someone holds a strong identity in their work they are more readily able to formulate meaning from work (Steger, & Dik, 2012). In fact, researchers are beginning to argue that meaningful work is so important to identity, autonomy, and dignity that is should be thought of as a “fundamental human need” (Yeoman, 2014).

A striving for meaning.

Workers seem to value and seek out meaningful work. One research study found that 51% of workers were willing to accept a lesser role or lesser wage for work they believed was contributing to something more meaningful (Kelly Services, 2009). Another study found that over half of the surveyed managers, directors, and executives, were looking for a greater sense of meaning in their working lives (Holbeche, 2004). Status nor compensation dictates meaning from work, and workers are willing to sacrifice both for more meaningful experiences. Furthermore, meaning from work is not limited to work for pay. Volunteer work is often described as very meaningful and has been linked to better mental and physical health (Van Willigen, 2002). In fact, it was found that a sense of meaningfulness was key in developing the salient role as a volunteer that in turn links to well-being (Thoits, 2012). It is this ability for meaning to be produced without pay that leads to the belief that meaning from Making could be assessed similarly to meaning from work. The Work and Meaning Inventory (Steger, Dik, & Duffy, 2012) was developed to reflect the depth at which people experience their work as meaningful, and was adapted to interchange work with Making to assess the depth at which people experience their Making as meaningful.

In addition to the importance of meaning in work to the employee, the employer also benefits from workers engaging in meaningful work. Without meaningful work employees demonstrate low organizational commitment and, production and profit suffer (Gallup, 2012).

Developing meaning.

Fortunately, meaning in work is not directly dependent on duties, output, and compensations but is reliant on the perception of certain factors by the employee. This means an individual can find meaning from work in many environments and that not all environments will

be equally meaningful for everyone. Individuals are "the ultimate arbiters of the meaning of their own work (Rosso et. al., 2010, p. 115)." However, there are factors that seem to relate to the level of meaningfulness one finds in work including: coherence, direction, significance, and belonging. Coherence speaks to the match between a person's self-concept and the role he or she is assigned at work. Direction is the organization's ability to provide movement towards a person's values and develop a sense of trust in the motivation of the work. Significance refers to the belief, self-efficacy, that a person has the abilities to meet the needs of the work. Finally, belonging is the idea that a person feels connection, support, and loyalty to and from the place of work (Schnell et. al., 2013).

Meaning and calling.

A calling is typically thought of as a job that provides personal meaning and serves others. More expansively, a calling includes a transcendent summon to work (Dik & Duffy, 2009). Meaningful work falls under the umbrella of a calling. One cannot live a calling without meaningful work, yet one can participate in meaningful work that is not a calling. Research has supported many benefits of a calling including career commitment, job satisfaction, better understanding of self, personal purpose, and meaningful work. There is also initial support for a connection between a calling and, well-being and life satisfaction (Duffy, Allan, & Bott, 2012; Duffy, Dik, & Steger, 2011; Steger & Dik 2010). Perhaps such benefits can also be found in meaningful work.

Life Satisfaction

Life satisfaction: a part of well-being.

In 1996 Hall argued, the most important factor of a career (or work) was the ability to facilitate psychological success or well-being,

> the feeling of pride and personal accomplishment that comes from achieving one's most important goals in life, be they achievement, family happiness, inner peace, or something else. This is in contrast to vertical success under the old career contract, where the goal was climbing the corporate pyramid and making a lot of money. While there is only one way to achieve vertical success (making it to the top), there are infinite ways to achieve psychological success, as many ways as there are unique human needs (p. 8).

When describing well-being philosophers present two perspectives. The hedonic perspective focuses on the presence of positive affect and the absence of negative affect. The eudaemonic perspective focuses on living a meaningful life (Brown & Lent, 2016). The importance of meaning in life was previously discussed. Now the presence of life satisfaction is explored.

Life satisfaction is linked to many experiences or more accurately how an individual views the total of these experiences. While happiness is a state experience tied to emotions, life satisfaction is defined as an assessment of one's life according to his or her unique criteria. Life satisfaction is believed to be a purely cognitive-judgment process (Diener, Emmons, Larsen, & Griffin, 1985). The Satisfaction With Life Scale (Diener, Emmons, Larser, & Griffin, 1985) was selected to measure the construct of life satisfaction for this study given its flexibility for participants to freely weigh multiple life domains and feeling states when responding to questions regarding overall satisfaction with life.

When considering emotional well-being psychologists assess life satisfaction, negative affect, and positive affect. Subjective well-being is linked to many positive outcomes however, well-being can refer to psychological well-being, social well-being, and emotion well-being (Lopez & Snyder, 2003). Emotional well-being has been predictive of "the happy-productive

worker" reporting more positive emotional symptoms, and receiving higher performance ratings at work (Wright & Bonett, 1997). While research supports each domain of subjective well-being, less research has been done to support subjective well-being as a whole. Additionally, authentic happiness theory conceptualizes life satisfaction as the measure of happiness, and not a part of a larger well-being construct (Seligman, 2011). This research study choses to focus on life satisfaction rather than subjective well-being or emotional well-being given the research to date (Lent, 2004; Lopez & Snyder, 2003).

Benefits of life satisfaction.

Intuitively people want more life satisfaction, but why? Research studies have linked life satisfaction to resilience, positive mood, and self-efficacy. Noted is a bidirectional relationship with life satisfaction and positive affect and self-efficacy (Lent, 2005). Furthermore, lower levels of life satisfaction are linked to depression, loneliness, poor mental health, poor physical health, and poor performance (Hirchi, 2011; Huebner, Suldo & Gilman, 2006). Life satisfaction is increased with goal progress, environmental resources, self-efficacy, and positive affect. Of course, the "spillover hypothesis" is still relevant stating that those with more domain satisfaction (e.g. work satisfaction) also experience more global life satisfaction (Rain, Lane, & Steiner, 1991). Additionally, Judge and Shinichiro (1993), found a reciprocal effect of life and job satisfaction.

The hazy path between work and a satisfying life.

Unfortunately, the findings for direct relationships between work variables and life satisfaction have been mixed (Steger & Dik, 2012). Some initial support suggests vocational identity, a person's sense of clarity and stability for personal interests, values, and characteristics, is a predictive variable for life satisfaction and well-being (Holland, 1997; Hirshchi, 2011a).

Interestingly, the relationship between vocational identity and life satisfaction was so strong that it fully mediated the effects of core self-evaluation (an individual's assessment of worthiness, competence, and capabilities) on life satisfaction (Hirshchi, 2011a). This suggests that interest, values, and characteristics of an individual facilitated by vocation might be more important for life satisfaction than capabilities or worthiness. Later, researchers were exploring the moderating effects of volition, a choice made by will, and found that it related not only to job satisfaction for employed adults but also to life satisfaction for unemployed adults (Duffy et al., 2013). While work may not directly influence life satisfaction, it appears to be strengthen by the ability to make choices based on interest, and values which may relate to work experiences.

Career Decision Making

Career decision making: the old and new.

Navigating to a job that would provide many benefits was once very linear. In the new world of work vocational psychologists and job-seekers are asked to find routes less traveled. One route that is complicated by the new work era, and the increased number of work transition, is the career decision making process. Historically, career counseling focused on person-environment (PE) fit 'a la Holland code types', or how one's personality, interest, abilities, work values, and work-environment all fit together in a matching process to make a career decision (Erford & Crockett, 2012).

Now with fewer and simultaneously more options than ever, innovative trails must be taken on the way to a career decision. A decision-maker needs to consider the state of the economy, potential education alternatives, basic needs, interests and meaningful work, and ability, all while having access to more information than ever before. Some models have sought to optimize choice by strategically evaluating each option. But with practically endless

alternatives just a Google search away, the extensive pool can never be completely systematically evaluated (Walsh, Savickas, & Hartung, 2005).

New models guide psychologists and job-seekers through the decision-making process in the new career era. Prescriptive models aim to make a satisfying choice, not the optimal decision. Individuals go about this focusing on the process of dynamic decision making and not so much the end decision (Gait and Tal, 2008). Interests no longer play such a heavy role in the decision-making process and factors such as length of training, expected income, work environment, interpersonal environment, and professional advancement are more strongly incorporated. The person identifies possible careers and evaluates the qualities of the job based on an importance rankings they have created (Gati, 1998).

Many factors have been supported to help the career decision process. Highly valuing occupational interests, high work engagement, mastery in leisure activities, generalized self-efficacy, emotional intelligence, extraversion, and dependability were all found to be positively related to adaptive career decision making (Di Fabio & Kenny, 2011; Gati et al., 2011; Hirshchi, 2011b; Jung & McCormick 2011; Konstam & Lehmann, 2011). However, perfectionism, need for cognitive closure, and external locus of control were found to inhibit career decision making (Gati et al., 2011).

Other prescriptive models highlight the need to create similar alternatives to the job-seekers position of choice. By creating alternatives the individual is able to identify the most important aspects of a desired career path and the aspects on which they are willing to compromise. While compromise is an inherent component of almost all decision making, career decision models hope to minimize compromise (Gati, 1993; Pitz and Harren, 1980). Research suggests there is an order in which people are likely to compromise, one perspective is that

people will first compromise on interest, then on prestige, and then on sex-type of the occupation (Gottgredson, 1981). What one compromises on may have direct impact for their ability to find meaning in that work.

Occupational engagement.

As it has been described, decision making as an evaluation of alternatives is too simplistic for the new world of work. Krieshok, Black, and McKay (2009), suggest using an adaptive career decision making model, the trilateral model, which introduces engagement into the 3-point decision-making process. Part 1) system 1 is presented as the intuitive mind operating on habits, implicit information, and is often emotionally charged. Part 2) system 2 is thought of as the rational mind utilizing deliberate and systematic approaches. When considering system 1 and system 2 the decision-making process no longer seems so definable or controllable. Along with system 1 and system 2, occupational engagement is identified as part of the trilateral model that keeps both systems "in check".

Part 3) occupational engagement is participating in career and life activities that as a byproduct helps to inform the career decision making process. Occupational engagement does not occur exclusively in the time of career transition or in times of career decision making, but can be partaken in at any point and throughout one's life. These experiences provide an individual with better understanding of his/herself both intuitively and rationally (Krieshok, Black, & McKay, 2009). Patterns about preferences, abilities, and values emerge through engagement in experiences. It is argued that psychology can provide tools to help facilitate understanding of oneself rationally but the understanding of one's intuitive preferences occurs best through experiences. Occupational engagement has the potential to provide not only the

language for personal desires or capabilities, but the experience to feed the all too often, reliant "gut" decision.

Occupational engagement is conceptualized as having two facets: job curiosity, and job involvement. Job curiosity relates to the search of possible career options. This can occur for someone transitioning vocationally or for someone currently working who is showing interest in the current state of the workforce. Moreover, it speaks to the willingness of a person to consider alternative job options. Job involvement relates to a person's current job field and the engagement in that work or organization. This is not limited to remaining stable in one's career but can encompass exploration of growth within the organization (Krieshok, Black, & McKay, 2009; Scott, 2006). Occupational engagement behaviors include: joining projects, volunteering, attending seminars, networking with other professionals, and investigating job openings (Cox, Bjornsen, Krieshok, & Liu, 2016). The original Occupational Engagement Scale for College Students (Krieshok, Black, & McKay, 2006) was modified to include an employed adult population in the Occupational Engagement Scale for Employed Adults by Scott (2006). This modification by Scott (2006) measures both job curiosity and job involvement for an adult population and is utilized in this study. Someone, therefore, who displays high occupational engagement is participating in current tasks in their work, while also exploring possible alternatives or opportunities for growth. This helps to view decision-making as not a single point in time but as a process one can develop. Additionally, there is initial support that those who engage in occupational engagement behaviors are maximizing the likelihood of selecting a career that is satisfying (Scott, 2006). Beyond career decision making, occupational engagement (or job involvement as it was operationalized) has been linked to encouraging self-affirmations and subjective well-being (Rebeiro, & Cook, J. 1999) and perhaps is facilitated by a supportive

environment and a strong career identity (Poux & Fry, 2015). Occupational engagement helps to facilitate adaptability in the chaotic world of work.

Career adaptability.

In addition to occupational engagement as an enhancement of the career decision making process, career adaptability is also critical in navigating the new world of work and career choices. Career adaptability is a part of career construction theory which sets out to highlight life themes that create meaning from work (Savickas, 2005). Simply, it is thought of as showing readiness and having resources for successfully facing career transitions (Johnston, 2016).

Career adaptability is broken down into four resources known as "adapt-abilities": concern, control, curiosity, and confidence. Someone who is thought to be career adaptable is concerned with their work future, shows personal control over their work future, is curious and explores possible opportunities and self as it relates to work and life roles, and has confidence in their ability to pursue goals (Savickas, 2005). As such, the Career Adapt-Abilities Scale-USA form (Porfeli & Savickas, 2012) that is used in the current research study targets the prior four outlined "adapt-abilities." Career adaptability has been linked to successful career development, positive responses to career challenges, and improved well-being (Johnston, 2016).

Longitudinal research has found career adaptability to predict many positive benefits including life satisfaction as it relates to quality of life and reduced work stress. Additionally, career adaptability longitudinally predicts career satisfaction, increased sense of power, increased reemployment quality, and occupational self-efficacy. As psychologists continue to understand career adaptability certain factors have been found to correlate with or predict increased career adaptability including: openness, meaningfulness, career calling, hope, education, age, and social support (Johnston, 2016). In fact, therapeutic techniques that sought to compose a meaningful

story such as narrative counseling or constructivist resume writing helped increase career adaptability (Del Corso & Briddick, 2015; Scholl, & Cascone, 2010).

In addition to theory development future research is needed on the activation of career adaptability based on environments. It is already known that those in career transition show higher levels of career adaptability, yet job insecurity and job strain decreases career adaptability (Durarte et al., 2012, Maggiori et al, 2013). It is believed that it is the meaning of the situation that dictates the impact on career adaptability, and perhaps certain environments even in a time of loss are better at facilitating challenge and not threat (Johnston, 2016). Of the four adapt-abilities, confidence and control have been found to be related to life satisfaction, and positive affect. These adapt-abilities capture how one relates to personal responsibilities, self-reliance, and a tendency to do what is right for them (Konstam, Celen-Demirtas, Tomek, & Sweeney, 2015). In the world of work not all environments foster a since of control or confidence equally.

Including Marginalized Groups in Understanding the World of Work

Advocacy for diversity in vocational psychology.

In the 30th anniversary issue of *The Journal of Vocational Behavior* the following statement was made, "there is a need for more research focusing on minority and underserved populations … in the workplace (Walsh, 2001, p. 263)." In the same issue Blustein (2001) advocated, "the goal of a psychology of working is to include the work lives of all citizens in our scholarship, not simply the well-educated and affluent." However, all too often the methods used for career exploration comes with a cost of great privilege. Career decision making models often assume unlimited time and do not factor in the income loss that can result from someone searching for a meaningful, or even a satisfying job over the available-now job.

The new era of work often highlights excess information and opportunities, but what about fewer options? Not all opportunities are created equal and while there may be more opportunities in the world of work, those opportunities are not open to everyone. Most career theories have wrongly assumed a large degree of choice is available to the individual. Capital comes in many forms including monetary assets and networking support, and is typically a privilege of SES, or majority status. In following the spirit of Savickas (2005), Richardson (2010), and Blustein (2011), and many other researchers, vocational psychology looks to support individuals with all types of relationships to work.

Women, ethnic minorities, and those with low-socioeconomic status.

Implications for transitions in the chaotic world of work have already been reviewed, but for certain populations these transitions can be even more rocky. The relationship between gender identity minorities, ethnic minorities, and those with low SES have been further explored, finding all such statuses come with increased barriers when trying to adapt within the world of work.

The female gender role has been found to influence career development encountering many additional barriers. The power differential women experience in many areas of life also influence their relationship with work. A lack of access alone, not based on merit but demographic characteristics, to productive work environments limits the potential for satisfying and rewarding work (Blustein, 2006). As far back as 1959, gifted men and women were followed in a longitudinal study that found that gifted women were being forced to choose between career and family, while their male counter parts were not (Terman & Oden). During that time of research, it was argued these women still experienced freedom of choice, however, the backlash from friends, family, and society when career was chosen over family redefined choice as

coercion (Betz & Fitzgerald, 1987). Further sexist socialization has contributed to the discrepancy of women in the fields of science and technology. Women often discrediting, or having discredited, their abilities in these prestigious career fields (Lent et al. 2002).

Beyond limited access or hostility when trying to enter the world of work, once provided entry women have been met with sexual harassment and lower compensation. Sexual harassment in the work place has been found to effect women psychological, physically, and financially (Fitzgerald, 2003). Furthermore, the wage gap highlights that a woman is often compensated less than a man in the exact job (Blau & Kahn, 2007). Such instable environments for women could contribute to greater numbers of work transitions and fewer opportunities to become established.

These barriers, including the wage gap and limited access to all career fields are also true for ethnic minorities (Phelps & Contantine, 2001). More recently, attention has been brought to the issue that traditional career development models do not capture the experience of ethnic minorities (Smith, 1983). Historical racial oppression continues to have impact on education and vocational identity for ethnic minorities (Helms & Cook, 1999). Additionally, racism continues to immerse the world of work. For example, ethnic minorities are stereotyped for their work ethic, communication skills, and overall intelligence without any information other than their appearance (Blustein, 2006).

Noting that race and gender often correlate to access of resources, ethnic minorities disproportionately having higher levels with low-SES. Researchers argue SES is a structural factor that determines access to resources and identifies a ceiling effect for career obtainment (Blustein et al. 2002). Sewell and Hauser (1975), found that those factors correlating to satisfying work were also correlated to being born into a wealthy family. For so many, the choices around education opportunities, as well as career possibilities are limited by the family

of which they are born. Early access to education and skill building can influence many transitions later in life.

Often vocational psychology is far off base from the experience of the lower working class. In fact, in a study that looked at the difference in how young high-SES adults described work in comparison to young low-SES adults, it was found that high-SES students described work in terms similar to vocational psychologists. That is in relationship to meaning, satisfaction, and choice, while low-SES adults described work in relationship to survival (Blustein et al. 2002).

All three of these marginalized statuses accompany greater barriers for navigating the world of work. Holding multiple marginalized identities can be even more limiting. Psychologists are called to incorporate these groups into more complete models of understanding one's relationship to vocation. One common finding across gender, racial, and SES minorities was the need for social supports as it relates to career development, and transitions as many of these identities can be excluded from larger society (Erford & Crockett, 2012).

Work and community.

Blustein (2011), presents an integrative relationship theory of working that addresses the importance of relationships in the development of meaningful work. Because not all individuals have the privilege of looking for work that aligns with their interests, values, and abilities – focusing on relationships is a more inclusive way helps to derive meaning from work. Blustein (2011), emphasizes that work relationships have the ability to positively or negatively influence work lives and vice versa. By thinking of work as a relational act, of which each decision and experience is shaped by relationships opportunities are provided to receive meaning from work that otherwise does not fit interest, or meet a transcendent calling. Such conceptualization helps

to meet the goal that working should provide some degree of meaning, matter, and dignity in an individual's life. As presented, relationships also help facilitated the career decision making process, and can help to facilitate self-knowledge (Gergan, 2001).

In this model working becomes the focus over career. Working is described as "effort activity and human energy in given tasks that contribute to the overall social and economic welfare of a given culture…a set of activities that, under optimal circumstances may yield greater volition levels in education and work-based options, culminating in a career (Blustein, 2011, p. 3)."

A more complete conceptualization of work.

In recognizing how the world of work impacts most individuals of working age Richardson (2012) identifies four contexts: market work, personal care work, market work relationships, and personal relationship as areas critical in constructing lives. Market work, or work done for pay, is often the limited operational definition of work used by vocational studies and colloquial understanding alike. By labeling work that is done to care for others, to build relationships, to enhance communities without pay, as personal-care work, theorists have a way of including a more expansive definition of what it means to participate in work.

Such work as caring for children/family members, caring for personal needs, and volunteering for community needs has often been done by women. Much like a base rate of income is not necessary for work to be considered a calling in this conceptualization pay is not a necessary component of valuable work. This opens the understanding of how individuals can participate and benefit from a relationship with work. Vocational psychologists continue to move away from a restricted focus on careers and towards a holistic view of life improvement including psychological health (Richardson, 2012).

Work plays an important role in developing identity, finding meaning, and experiencing life satisfaction (Duffy et al., 2013; Hirchi, 2011a; Roessler, 2012;). However, not only has the state of work become increasingly unstable, the field of psychology is recognizing the limited availability of work opportunities to minority and disadvantaged groups. How does an individual engage in work in a way to receive psychological benefits? One way the benefits from the world of work have been opened is through the valuing of personal-care work (Richardson, 2010). No longer is work for pay the only work of value, or interest. Another way benefits have been opened is by encouraging an active approach to career decision making beyond a career match (Gait and Tal, 2008). As individuals engage in work in an adaptable manner, the journey itself is beneficial and is no longer reliant on an end goal.

This study proposes the investigation of the Maker Movement as a group that can facilitate career engagement and career adaptability. These facilitate the career decision process through development of identity and meaning from creating, regardless of monetary compensation.

The Maker Movement

Making: a recent history.

The Maker Movement refers to a global do-it-yourself (DIY) community that formed from the desire to combine cutting-edge technology with people's urge to create things in a hands-on way. The start of the Maker Movement as we know it today, began around 2005 with the launch of "Make" magazine by Dale Dougherty, followed by the first Maker Faire held in San Francisco in 2006. Today, there are nearly a thousand Makerspaces (shared spaces for innovation and production) around the world (Anderson, 2012).

Finding its ancestry in home economics, shop class, sculpture, and chemistry lab, the Maker Movement is returning work to a hands-on experience, calling for people to engage in development through design (Anderson, 2012). Such engagement includes work in the science, technology, engineering, and mathematics (STEM) fields. The origin of Makerspaces developed from hacklabs, spaces organized to bring together people with shared digital technology interests. Beginning in 1990 these spaces allowed hackers to collaborate, socialize, and most importantly expand their knowledge. Hackers were able to personalize everything from cars to the internet (Dougherty & Conrad, 2016). This would become the foundation of Makerspaces and the Maker Movement. Hacklabs provided free public access to computers and the internet. Here hackers became media activists and promoted open publishing in the spirit of a true grassroots movement (Maxigas, 2012). While hackers focus on free software and open access development, Making became all-encompassing development with the same community based approach.

The Maker spirit.

Much like the products of the Maker Movement, the definition of the movement continues to evolve. However, certain language routinely surrounds its description. Words like innovation, creativity, and doing, easy flow when describing this movement, but used just as easily are; resourceful, failing, and community. When Maker Faire founder Dale Dougherty speaks about the movement he describes hands-on, life-long learning with people joining together taking risks towards understanding and solving problems (D. Dougherty, personal communication, May 5, 2016). This he calls a Maker mindset, gaining access to a physical and mental toolset.

Empowerment is also frequently used when describing the Maker Movement. Makers believe they can create a difference in the world. The creation of something new, from drastic innovation to moderate personalization, can only come from someone who believes in their abilities and themselves (Thomas, 2014). “It is clear that what many appreciate about Making is not just the finished product, but also the character traits that the process helps develop. (Dougherty, in Thomas 2014, pp.viii).”

The movement also exemplifies community. When speaking about Making, Makers mention mentors, friends, teachers, and all are fellow Makers who have provided support. The Maker Movement grows through connections and shared ideas. This spirit of the Maker Movement is exemplified by open access. Open membership, and open information. Restrictions are not placed on ethnicity, gender, age, socioeconomically status, or even abilities. Leaders in the movement often express, “everyone can be a Maker” (Thomas, 2014).

Definitions.

As with any new theory, movement, or practice the definition of new terms matters. The Maker Movement is no different. Lande, Joran, and Nelson (2013) sought to clarify the terms of Making through an exploration of media uses and self-report from those participating in the movement. *Maker*, or a participant in the Maker Movement, is defined by founder Dale Dougherty as someone who looks at things a little differently, and learns by building rather than from a book. At times Maker is simply thought of as someone who creates and shares projects. *Hobbyists* are those who in previous decades participated in activities similar to Making but without the digital age. Hobbyists are described as the precursors to Makers, and can easily transition into the role of Maker. *Tinkerer* typically refers to someone who works on their own and usually for themselves. These people can be thought of as the “do-it-yourselfer.” Tinkerer is

very similar, and often interchangeable to Maker both referring to someone who invents to fill a need or want. Finally, *Making* is a verb defined by Makers themselves. Most often it refers to creating something new, with action being taken to accomplish something.

The spectrum of products created by Makers is astonishing. Innovative dresses, robots, spy transmitters, sculptures, photo booths, mind control games, food, homes, and music visualizers have all come from the Maker Movement. Some Makers specialize in domains and some try it all but inevitability crossover occurs and innovation emerges victorious. The Maker Movement has been referred to as the prototyping revolution where Makers learn the fun of trial and error (Dougherty & Conrad, 2016). The variety of projects being created is limitless and can spark the interest of anyone, and anyone can bring value to the movement.

Where Making is happening.

"The serious tinkerer has always needed a dedicated space: a 'room of one's own,' in author Virginia Woolf's words (Dougherty & Conrad, 2016, pp.61)." Often starting in one's shed or den, the Maker can turn to a Makerspace for room to create. Makerspaces are large buildings or spaces that are typically formed from a community interest including small funding teams, museums, libraries, or schools, but can also be funded by for-profit businesses and institutions. Akin to the early garages used in development of Apple™, Makerspaces are said to be incubators of innovation. These spaces vary tremendously but provide large- and small-scale tools, internet access, classes, and other Makers. The presence of other Makers serves as a community of teachers and collaborators (Dougherty & Conrad, 2016).

Within the Maker Movement there has been a call to enhance the culture of open and supportive exploration. This is described similarly to the development of fitness gyms, which began targeting a limited group of male body builders, then growing to accommodate women,

cardio enthusiasts, and the casual user. Original hacker labs seemed to attract males with very similar interests. Men in general have historically been encouraged more than women to Make. However, the culture of a Makerspace hopes to serve the whole community which includes a diverse population (Dougherty & Conrad, 2016).

Making is also happening through Maker Faires. The goal of a Maker Faires is to create more Makers (Thomas, 2014). Called the greatest show and tell on Earth, Maker Faires, and Mini-Maker Faires have popped up around the world. At these events Makers showcase their inventions, become inspired by one another, and invite non-Makers into the Maker Movement. Non-Makers "catch the bug" to tinker and share their creativity. Established Makers receive valuable encouragement and feedback for improvement. Maker Faires radiate a sense of play and optimism for the future (Dougherty & Conrad, 2016). And above all a community is strengthened.

Finally, the online community has provided a virtual Making environment. Online Maker communities are found throughout social media, blogs, and peer-to-peer ecommerce sites. Makezine.com is the online forum for the bimonthly *Make:* publication. This site provides the latest news in the movement, how-to guides, upcoming events, ways to get involved, access to low-cost tools, and a way to share creations and questions. The internet provides 24-hour entry to a movement that heavily values and thrives from open-access.

Pro-Makers.

In some ways all Makers are amateurs, open and willing to learn unknown techniques and fields, building upon whatever base knowledge is present. However, a distinction has been made for professional Makers, or *Pro-Makers* (Dougherty & Conrad, 2016). Pro-Makers obtain an income doing what they love. Kids are always Making; scribbling, building, experimenting,

and learning. Pro-Makers do much of the same, adults and kids, who have been able to turn creations into profit. Pro-Makers have transitioned from hobbyist to professional. Some believe Pro-Maker includes anyone, regardless of age, who sells any creation for profit, others conceptualize Pro-Makers are those who are able to make a living through Making (Baichtal, 2014; Dougherty & Conrad, 2016).

The Maker Movement lends itself in two ways for people to generate income. First through its spirit by providing an empowering network and secondly, through its access to large scale machinery (Baichtal, 2014). As discussed, the Maker Movement is said to help individuals believe they can create a difference in the world (Thomas, 2014). Support systems provide confidence and guidance. Makers turn to each other to learn about the unique routes taken to create a thriving business. Shared are website skills, market prices, marketing strategies, potential funders, and the ever so important stories of failure (Baichtal, 2014). The Maker Movement provides knowledge accompanied by a battle buddy.

Influenced next are the production logistics. Countless stories have been shared through the Maker Movement of individuals who began creating small scale projects (e.g. gadgets, beard conditioner, drones, etc.) only to join a Makerspace to enhance production (Hatch, 2013, Baichtal, 2014). Or without initial access to tools an idea would have never become a tangible product. Receiving a significant offer for an innovative product is inconsequential without the means of large scale production. Not all individuals have the space to store 200 orders of raspberry pi powered binoculars or the machinery powerful enough to print 100 R/C cars but Makerspaces do.

Makers and the economy.

As Makers create and/or sell products the relationship between Making and working is still obscure. Leaders in the Maker Movement believe the creative economy is upon us. To illustrate such movement, they share the story of typesetting machines which threatened the jobs of typesetters who place characters by hand. Such an invention created anxiety and push back from workers. Yes, the typesetters were no longer needed to place characters. However, the technology also introduced industries that were not previously available and jobs in design were created. It is believed that in the future more and more people will be creating, not finding jobs. This will require people to see themselves as creative, and able to provide value (Dougherty & Conrad, 2016).

It is known that manufacturing has seen a large shift in the U.S. By evolving manufacturing into a small, not big, production it empowers people to act independently (Jacobs, 1970). Makers need to make 1 to 5,000 of a thing not 50,000 (Dougherty & Conrad, 2016). Small manufacturing is working. Those who are participating in the Maker Movement have contributed $29 billion annually into the economy (Owyang, 2014) and are contributing to changing the face of industry. Makerspaces are being described as a shared resource that will play a key role in the economic transformation in which social capital becomes more important than financial capital. With this shift, it is believed that ownership of goods will become less important than access of goods (Rifkin, 2014).

Making is also happening in unconventional work environments. Makers share stories of their experiences with conventional work environments and troubles with mental health disorders like ADHD, inflexible work schedules, and confining physical boundaries (Dougherty & Conrad, 2016). Making allows one to create the rules by which they play. As creativity,

access, and collaboration become increasingly important in the world of work these unconventional work environments can help to facilitate the ability to apply skills to solve new problems.

Finally, the role of compensation must be considered when understanding the role of Making as work. As it has been discussed previously in this paper, no longer is the only work of value, work for pay (Richardson, 2012). Many Makers participate in the movement and do not sell their creations. If it is assumed that Making is meaningful for Makers, perhaps the psychological benefits connected to meaningful work can be found with the absence of monetary payment. By exercising the Maker Movement's moral imperative "to use our creative freedom to make the future better, to be hands-on in making change, and to get everyone participating fully in the future (Dougherty & Conrad, 2016, p. 270)", Makers are participating in work (Bean, Farmer, & Kerr, 2015).

Makers and the World of Work

Throughout history work has provided meaning, impacted life experiences, and influenced life satisfaction (Holland, 1997; Thoits, 2012). Psychologists are recognizing and searching for answers to how to help people navigate the new world of work. Additionally, the way work is conceptualized is morphing to include broader access and understanding. "Increasing access to volitional working lives ought to be one of the hallmarks of contemporary social justice efforts …. vocational psychologists need to articulate a broader vision of good working life given the reality that so many individuals do not have access to work that is interesting and/or reflective of their values (Blustein, 2011, p.4)"

As psychologists seek to understand and provide therapy around the unpredictable world of work, research suggests investigation should turn to innovative work experiences. The Maker

Movement appears to easily lend itself to those looking to engage in career exploration, and enhance career adaptability. Makers perhaps have the opportunity to job- or leisure- craft their experiences up the invisible ladder when job opportunities are low. As a result, influencing meaning-making and work engagement (Petrou, Bakker & den Heuvel, 2017). This can all occur through an inclusive community with no membership requirements. This research seeks to better understand how Makers are participating in the Maker Movement and the possible associated benefit.

Hypotheses

Hypothesis 1.

Participation in the Maker Movement is expected to yield a large range of distribution results with respect to age, gender, ethnicity, personal income, level of education, and employment status.

Hypothesis 2.

Additionally, participation in the Maker Movement is expected to involve a wide variety of Maker roles (Pro-Maker status, student, mentor, and/or creator). Descriptive statistics will be presented.

Hypothesis 3.

The claimed spirit of the Maker Movement is one that supports inclusion, therefore it is expected that representation of membership will not differ for marginalized groups (e.g., non-male, ethnic minority, lower socioeconomic status).

Variable prediction 3.1.

No significant difference is expected when comparing the frequency of non-male Makers, to the frequency male Makers.

Variable prediction 3.2.

No significant difference is expected when comparing the frequency of ethnic minority Makers, to the frequency of European-American/White Makers.

Variable prediction 3.3.

No significant difference is expected when comparing the frequency of low-SES Makers, and the frequency of high-SES Makers.

Variable prediction 3.4.

No significant difference is expected when comparing the frequency of a Maker with any marginalized status, to the frequency of Makers without any marginalized status.

Hypothesis 4.

Without prior research for the distribution of how people are accessing the Maker Movement (i.e., Maker Faires, Makerspaces, online), the null hypothesis will be tested, or the expectation that no differences exist.

Variable prediction 4.1.

Rates at which Makers access Maker Faires will not differ from rates at which Makers access Makerspaces.

Variable prediction 4.2.

Rates at which Makers access Maker Faires will not differ from rates at which Makers access Making online.

Variable prediction 4.3.

Rates at which Makers access Makerspaces will not differ from rates at which Makers access Making online.

Hypothesis 5.

It can be predicted that participation in the Maker Movement will facilitate skills needed in adapting to the circumstances of the world of work. Richardson (2012), identifies differing relationships to the world of work for marginalized groups. Marginalized groups are expected to have higher levels of participation in the Maker Movement predicting higher levels of career adaptability.

Variable prediction 5.1.

Higher levels of participation in the Maker Movement are expected to predict higher levels of career adaptability.

Variable prediction 5.2.

Higher levels of participation in the Maker Movement are expected to predict higher levels of career adaptability for Makers with a marginalized status.

Variable prediction 5.3.

Higher levels of participation in the Maker Movement are expected to predict higher levels of career adaptability for Makers without a marginalized status.

Variable prediction 5.4.

The null hypothesis is tested for any marginalized status affecting the size of the correlation between levels of participation and career adaptability.

Variable prediction 5.5.

The null hypothesis is tested for non-male status affecting the size of the correlation between levels of participation and career adaptability.

Variable prediction 5.6.

The null hypothesis is tested for ethnic minority status affecting the size of the correlation between levels of participation and career adaptability.

Variable prediction 5.7.

The null hypothesis is tested for low-SES status affecting the size of the correlation between levels of participation and career adaptability.

Hypothesis 6.

Makers are believed to participate in the Maker Movement both in times of career transition and career involvement. While participating in the Maker Movement exposure to deeper engagement in a selected field as well as exposure to other career possibilities and skills may lead to greater occupational engagement (Anderson, 2012; Scott 2006). Therefore, higher levels of participation in the Maker Movement are expected to predict high levels of occupational engagement.

Variable prediction 6.1.

Higher levels of participation in the Maker Movement are expected to predict higher levels of occupational engagement.

Variable prediction 6.2.

Higher levels of participation in the Maker Movement are expected to predict higher levels of occupational engagement for Makers with a marginalized status.

Variable prediction 6.3.

Higher levels of participation in the Maker Movement are expected to predict higher levels of occupational engagement for Makers without a marginalized status.

Variable prediction 6.4.

The null hypothesis is tested for any marginalized status affecting the size of the correlation between levels of participation and occupational engagement.

Variable prediction 6.5.

The null hypothesis is tested for non-male status affecting the size of the correlation between levels of participation and occupational engagement.

Variable prediction 6.6.

The null hypothesis is tested for ethnic minority status affecting the size of the correlation between levels of participation and occupational engagement.

Variable prediction 6.7.

The null hypothesis is tested for low-SES status affecting the size of the correlation between levels of participation and occupational engagement.

Hypothesis 7.

It is expected that higher levels of meaning from Making will predict higher levels of life satisfaction. Past research has suggested that income might influence one's relationship with work (Richardson, 2012), therefore differences in life satisfaction scores will be compared between those who identify as Pro-Makers (have sold something within the Maker Movement), and those who do not identify as a Pro-Maker.

Variable prediction 7.1.

No relationship is expected between level of Maker participation and life satisfaction.

Variable prediction 7.2.

Higher levels of meaning from Making are expected to predict higher levels of life satisfaction.

Variable prediction 7.3.

For individuals identified as Pro-Makers, the relationship between higher levels of meaning from Making is expected to strengthen when predicting higher levels of life satisfaction.

Chapter 3: Methods

Participants

Participants included 182 individuals, age 18 or older, who have participated in the Maker Movement.

Procedure

All measures were delivered through a secure online survey program. Time for completion of the survey averaged 30 minutes per participant.

Participants were solicited in person at Making events and online. In person solicitation primarily occurred during a local Maker Faire event in the mid-west. Individuals were told a brief statement about the proposed study, including age requirement, and participation was requested. If the individual agreed he/she was provided a tablet to complete the survey online or he/she was given a card with the survey link to be completed at a later time, this was based on participate preference.

Additional participants were solicited through social media, periodical advertisements/editorials, and email list serves, all of which were provided with a survey link.

Measures

Demographics.

Demographic questions regarding age, gender, ethnicity, education level, social economic status, and employment status were included as part of the demographic questionnaire. Additionally, variables regarding Maker identity (e.g., role, activity, Pro-Maker status) and Maker participation (e.g., duration, location) were collected as self-report items. Key variables included: ethnic minority status (non-European-American/White), low-socioeconomic status (i.e.

$33,000 annual income or below; Beeghley, 2004), gender (i.e., female, male, other). The full demographic questionnaire included 37 items. See Appendix A for the full questionnaire.

Career Adaptability.

The Career Adapt-abilities Scale – USA (CAAS-USA) contains 24-items which combined for a total score measuring career adaptability (Porfeli & Savickas, 2012). Items are designed to measure concern, control, curiosity and confidence as psychosocial resources for individuals' career development. Each item is responded to using a 1 (not strong) to 5 (strongest) Likert scale. Higher scores indicate greater levels of adaptability resources. Cronbach's alpha for the overall scale is reported as 0.95, and support for concurrent validity with vocational identity was found. See Appendix B for the full measure.

Occupational Engagement.

The Occupational Engagement Scale for Employed Adults – Revised (OES-EA-R; Noble, 2008). The OES-EA-R is a 20-item measure with 2 subscales: job curiosity and job involvement. Total scores can range from 20-100, with higher scores indicating a higher occupationally engaged individual. See Appendix C for the full measure.

Meaning from Making.

For this study, the Making as Meaning Inventory (MAMI) was adapted from the Work as Meaning Inventory (WAMI) by Steger, Dik, and Duffy (2012). The original WAMI was found to predict life satisfaction. In the presented adaptation, the word "work" was replaced with "Making." The WAMI consists of 10-items assessing the degree to which participants felt their work (Making) was meaningful. Participants respond to items using a 5-point Likert scale using these anchors: absolutely untrue, mostly untrue, neither true nor untrue, mostly true, and absolutely true. Validity for the new MAMI was checked against one demographic item expected

to highly correlate with this scale (i.e., Does making things contribute to meaning in your life?). Further construct validity for the adaptation was established by assembling a panel of Maker Movement experts then having each expert rate the scale based on the construct of "how one might express meaning from Making" (Polit & Beck, 2006). Higher scores indicate higher levels of perceived meaning from Making. See Appendix D for the full measure.

Life Satisfaction.

The Satisfaction with Life Scale (SWLS) is a 5-item scale measuring global cognitive judgements about one's life satisfaction (Diener, Emmons, Larser & Griffin, 1985). The SWLS allows for participants to subjectively define various domains and feeling states. Items require a response on a 7-point Likert scale ranging from 7 (strongly agree) to 1 (strongly disagree). Cronbach's alpha showed evidence for high internal consistency at 0.87. Evidence for good convergent, and predictive validity was supported by Pavot, Diener, Colvin, and Sandvik (1991). Higher scores on the SWLS indicate higher life satisfaction. See Appendix E for the full measure.

Analysis

Data preparation.

All collected responses were evaluated for completion (n=306). Cases with a completion rate of less than 2% (i.e. no further information beyond agreed consent) were omitted from the sample (n=64). Demographic questions were then examined for extreme outliers, with none being found. Cases with missing values for any complete measure (i.e. CAAS-USA, OES-EA-R, MAMI, SWLS) were also omitted (n=59), these cases were compared to the final sample using independent-samples t tests to evaluate for difference in age, gender, ethnicity, education level, income, and employment status. No significant differences were found.

Table 1

Final Sample Cases and Omitted Cases Variable Comparisons

Variable	*df*	*t* value	sig	*M* completed	*M* non-complete
Age	180	.515	.607	43.06	44.38
Gender	232	-1.579	.116	1.49	1.37
Ethnic status	229	1.779	.076	.15	.25
Education level	198	-.435	.664	5.64	5.55
Personal income	227	1.952	.052	54,073	23,852,549
Employed for pay	229	.375	.708	1.20	1.22

Note: Gender was coded 1 = female, 2 = male. Ethnic status was coded 0 = European-American/White, 1 = ethnic minority. Education level was coded 1 = no high school, 2 = some high school, 3 = high school diploma/GED, 4 = some college, 5 = associates degree, 6 = bachelor's degree, 7 = graduate degrees. Employed for pay was coded 1 = yes, 2 = no.

Cases were then identified for having missing data on any measure (n=10). Missing values were replaced using case mean scores when creating overall scale scores. This requires all items on the individual scale are equivalent, missing values occur at random, and the mean is based on a high percentage of items with non-missing values (Green & Salkind, 2014). Therefore, missing cases were only estimated if more than 80% of the individual measure's items were completed (n=9). For the shortest measure this allowed for only one omitted item. Next, tests for normal distribution were conducted (i.e., binomial test, Kolmogorov-Smirnov test; Frey, 2016). Additionally, a review of skewness and kurtosis was assessed for all relevant variables.

Table 2

Tests of Distributions

Variable	Kolmogorov-Smirnov	Sig	Skewness	Kurtosis
Age	.182	.200	-.758[b]	.233
Gender	.473	.001*	-2.236[c]	5.000
Ethnic Minority	.514	.000*	.182[a]	.361
Personal Income	.254	.200	-1.245[c]	.947
Low SES	.441	.000*	.861[b]	.193
Level of education	.254	.200	.315[a]	-3.081
Employed for pay	.491	.000*	1.513[c]	.181
Pro-Maker	.367	.026*	.609[b]	-3.333
Student	.423	.000*	-.678[b]	.180
Mentor	.346	.000*	.044[a]	-2.020
Creator	.439	.000*	-.840[b]	-1.308
Sponsor	.487	.000*	-1.445[c]	.089
Marginalized status	.523	.000*	-2.345[c]	3.540
Total Maker Participation	.360	.033*	4.229[c]	5.600
Maker Faire Participation	.376	.020*	1.838[c]	3.751
Makerspace Participation	.266	.200	.733[b]	1.222
Researching Making	.390	.012*	2.032[c]	4.345
Career Adaptability	.364	.029*	-1.931[c]	4.028
Occupational Engagement	.325	.091	.580[b]	-3.297
Life Satisfaction	.256	.200	-.355[a]	-2.509
Meaning from Making	.319	.106	-.573[b]	-3.194

*p<.05
[a] -5. To .5 = approximately symmetric
[b] -.1 to -.5 or .5 to 1 = moderately skewed
[c] <-1 or >1 = highly skewed

Internal reliability estimates were assessed for all measures. Further validity testing was conducted for the adapted MAMI. Total item scores on the MAMI were assessed for correlation

with a self-report single item identification of meaning from Making collected through the demographic questionnaire. Pearson correlation coefficient was .44, $p<.000$ (Green & Salink, 2014). Of note, of the sample participants (n=182) only three individuals answered "no" and four participants answered "unsure" to the single meaning from Making item. Additionally, a panel of three Maker experts reviewed the adapted MAMI measure for content validity. All panel experts reported 100% agreement that the item content captured meaning from Making.

Table 3

Tests of Internal Reliability

Variable	Cronbach's Alpha
Career Adapt-abilities Scale-USA	.917
Occupational Engagement Scale for Employed Adults – Revised	.878
Making as Meaning Inventory	.867
Satisfaction with Life Scale	.883

Power analysis for sample size was explored a-priori for the most stringent model proposed, ANCOVA. Assuming a small effect size of f=0.25, an alpha of =0.05, and a power level 0.80 for 2 levels of the predictor variable and 1 covariate for a sample of N=124. For reference, a small effect size f =.01, significance level of a p=.05, and a power level .80 for 3 predictor variables would require N=1,082.

Hypotheses 1 and 2: Maker demographics.

In order to gain a conceptual understanding of the Maker population through sampling, descriptive statistics (i.e., mean, mode, standard deviation, minimum, maximum, percentage) were analyzed as appropriate for the following variables: age, gender, non-male, ethnicity, ethnic minority, personal income, lower SES, level of education, employment status, Pro-Maker status, student, mentor, creator, and sponsor (Green & Salkind, 2014).

Hypotheses 3.1 - 3.4: Access for marginalized groups.

One-sample chi-square tests of group difference were conducted for significance for the following pairings: a) non-male Makers and male Makers, b) ethnic minority Makers and European-American/White Makers, c) low-SES Makers and higher-SES Makers, and d) Makers with any marginalized status and Makers without any marginalized status. Effect sizes were calculated with the following equation: chi-squared/[(total sample size across all categories)(number of categories-1)].

Hypotheses 4.1 - 4.3: Avenues for Maker participation.

In order to compare mean use of access for different Making avenues of participation, scores for each avenue were transformed into percentages (Personal communication Frey, 2017). For example, the highest indicated lifetime number of Maker Faire attendance for this sample was 20. Maker Faire scores were transformed as a percentage of this score; if an individual indicated attending 20 Maker Faires he/she received a score of 1 and if an individual indicated attending 5 Maker Faires he/she received a score of 0.25. This same formula was used for weekly hours spent at a Makerspace (highest score = 128), and weekly hours spent researching Making (online or through other means; highest score = 85).

Paired-samples *t* tests were conducted to evaluate whether a difference of means existed between Maker Faire attendance, weekly hours spent at a Makerspace, and weekly hours spent researching Making. Given the number of *t* tests conducted the significance level was set at .017 given the conservative Bonferroni Adjustment. Effect sizes, of the *d* statistic was computed with paired differences figures, $d = Mean/SD$.

Hypotheses 5.1 - 5.7: Maker participation and career adaptability.

First Pearson's correlation coefficient was used to assess the relationships between Maker participation and career adaptability. Correlations were assessed for the total sample, for those with a marginalized status, and those without a marginalized status. The Bonferroni approach was used to control for Type I error and correlations were required to be significant below p =.017.

If significant results were found, a homogeneity of covariance test would have been conducted to identify whether marginalized status affects the relationships between Maker participation and career adaptability. This process would have been completed individually for the following marginalized statuses: female, ethnic minority, and low-SES.

Hypothesis 6.1 - 6.7: Maker participation and occupational engagement.

The same data analytic plan for hypotheses 4a-4g was used for hypotheses 5a-5g with the exception of the occupational engagement variable replacing the career adaptability variable.

Hypothesis 7.1 - 7.3: Meaning from Making and life satisfaction.

Pearson's correlation coefficient was used to assess the relationships between Maker participation and life satisfaction, and meaning from Making and life satisfaction.

Chapter 4: Results

Maker Demographics

1. Participants had a mean age of 42.54, were made up of 93 women and 89 men, 85.5% were European-American/White, 80% were employed for pay with a mean personal income of $54,073.11, and 66.7% of participants having a bachelor's degree or higher. As Makers 64.6% of participants have sold something in the Maker Movement and 51.5% identify as serving in a mentor role.

Table 4

Maker Demographics

Variable	Category	*n*	%	*M*	*SD*	min	max
	Age	142		42.54	13.30	18	82
	Ethnic Minority	26	14.5				
	Personal income	158		$54,073	$39.276	$0	$210,000
	Low-SES	48	30.4				
Gender							
	Female	93	51.1				
	Male	89	48.9				
	Other (fluid)	0	0				
Ethnicity[a]							
	African-American	3	1.6				
	Asian-American	7	3.8				
	European-American	162	89.0				
	Latino/Hispanic	5	2.7				
	Native-American	5	2.7				
	Other	8	4.4				
Level of education							
	No high school	0	0				

	Some high school	3	1.7
	HS diploma/GED	7	3.9
	Some college	38	21.1
	Associates degree	12	6.7
	Bachelor's degree	64	35.6
	Graduate degree	56	31.1
	Employed for pay	144	80.0
	Pro-Maker	113	64.6
Role(s)[a]			
	Student	62	34.1
	Mentor	93	51.1
	Creator	126	69.2
	Sponsor	38	20.9

[a] Participants were able to select more than one category.

Maker Roles

2. Participants endorsed the following roles within the Maker Movement at the following rates: student, 34.1% (*n*=62); mentor, 51.1% (*n*=93); creator, 69.2% (*n*=126); sponsor, 20.9% (*n*=38). A total of 42 unique Maker activities were reported, with 3D-printing being the most frequently reported activity.

Access for Marginalized Groups

3.1. A one-sample chi-squared test was conducted to assess whether women are participating in the Maker Movement at similar rates as men. The results were as expected, and not-significant, $\chi^2(1, N = 182) = 0.088$, $p = .767$. The proportion of women participating is not statistically different from the proportion of men participating in the Maker Movement.

3.2. A one-sample chi-squared test was conducted to assess the proportion of ethnic minorities, and non-ethnic minorities participating in the Maker Movement. The results were significant $\chi^2(1, N = 179) = 90.11$, $p < .01$. The effect size of .50 indicates that the observed

frequencies deviate largely from equal frequencies with ethnic minorities participating at lower frequencies.

3.3. A one-sample chi-squared test was conducted to assess the proportion of individuals considered to have a low-SES accessing the Maker Movement to the proportion of individuals considered to have an above low-SES accessing the Maker Movement. The results were significant $\chi^2(1, N = 158) = 24.33$, $p < .01$. The effect size of .15 indicates that the observed frequencies deviate slightly from equal frequencies with individuals considered to have low-SES participating at lower frequencies.

3.4. A one-sample chi-squared test was conducted to assess whether individuals who met any marginalized status requirement (i.e. female, ethnic minority, or low-SES) are participating at similar rates to individuals who do not met any marginalized status requirements (i.e. male, European-American/White, and above low-SES). The results were significant, $\chi^2(1, N = 182) = 104.63$, $p < .01$. The proportion of marginalized individuals participating in the Maker Movement deviates largely (effect size = .57) from equal frequencies with more marginalized individuals participating in the Maker Movement than non-marginalized individuals.

Avenues for Maker Participation

4.1. A paired-samples *t* test was conducted to evaluate whether Makers participate more through Maker Faires or Makerspaces. The results indicated that the mean participation for Maker Faires ($M = 0.14$, $SD = 0.20$) was significantly greater than the mean participation for Makerspaces ($M = 0.07$, $SD = .14$), $t(181) = 4.43$, $p < .01$, $d = .33$ indicating a small effect size.

4.2. Another paired-samples *t* test was conducted to evaluate the difference between participation through Maker Faires and through online Making. The results did not support a

significant relationship between Maker Faires access (M = 0.14, SD = 0.20) and online Making (M = 0.11, SD = .12), $t(181) = 1.67$, p = .10.

4.3. A paired-samples t test was conducted to evaluate the difference between participation of Makers through Makerspaces and through online Making. Mean access through Makerspaces (M = 0.07, SD = .14), was statistically different from online Making (M = 0.11, SD = .12), $t(181) = -4.13$, $p < .01$, d = -.32, with Makers accessing the Maker Movement online more frequently than Makerspaces.

Maker Participation and Career Adaptability

5.1. Person's correlation coefficient was used to assess the relationship between Maker participation and career adaptability. A statistically significant relationship was not found, $r(180) = .09$, p = .213, indicating no relationship between Maker participation and career adaptability.

5.2. For marginalized Makers, a Person's correlation coefficient was used to assess the relationship between Maker participation and career adaptability. A statistically significant relationship was not found, $r(158) = .04$, p = .645, indicating no relationship between Maker participation and career adaptability for Makers with a marginalized status.

5.3. For non-marginalized Makers, a Person's correlation coefficient was used to assess the relationship between Maker participation and career adaptability. A statistically significant relationship was not found, $r(20) = .46$, p = .031, indicating no relationship between Maker participation and career adaptability.

5.4 - 5.7. Without a relationship between Maker perception and career adaptability the assessment of moderation by type of marginalized status could not be completed.

Maker Participation and Occupational Engagement

6.1. Pearson's correlation coefficient was conducted between Maker participation and occupational engagement. The null was not rejected, and no significate relationship was found, $r(180) = .08$, $p = .317$.

6.2. Pearson's correlation coefficient was conducted between Maker participation and occupational engagement for Makers with a marginalized status. The null was not rejected, and no significate relationship was found, $r(158) = .07$, $p = .361$.

6.3. Pearson's correlation coefficient was conducted between Maker participation and occupational engagement for Makers with a non-marginalized status. The null was not rejected, and no significate relationship was found, $r(20) = .16$, $p = .492$.

6.4 - 6.7. Without a relationship between Maker perception and occupational engagement the exploration of moderation by type of marginalized status could not be completed.

Meaning from Making and Life Satisfaction

7.1. As predicted Pearson's correlation coefficient revealed no significate relationships between Maker participation and life satisfaction $r(180) = .006$, $p = .937$.

7.2. Pearson's correlation coefficient was conducted between meaning from Making and life satisfaction. A significant small effect size was found, $r(182) = .267$, $p < .001$.

7.3. For those who indicated a ProMaker status, Pearson's correlation coefficient was conducted between meaning from Making and life satisfaction. A significant small effect size was found, $r(113) = .192$, $p < .05$.

Chapter 5: Discussion

Summary of Results

The current study had two overarching goals. First, to further describe the characteristics and motivations of those participating in the Maker Movement. Second, to explore how the Maker Movement might be important to career development in the new climate of career unpredictability, specifically with regard to career adaptability, occupational engagement, and life satisfaction. To reach these goals a total of 182 individuals, over the age of 18, who have engaged in the Maker Movement participated in a survey including a demographic form, the Career Adapt-abilities Scale - USA, the Occupational Engagement Scare for Employed Adults – Revised, and the Making as Meaning Inventory.

Consistent with prior research, it was found that Makers tend to be White, to hold a college degree, to be employed, and to have a mean personal income of roughly $54,000. This study found that women are participating in the Maker Movement at equal rates as men, contrary to previous findings. Additionally, Makers are more likely to engage with a Maker Faire or online, than at a Makerspace. No relationship was found between Maker participation and career adaptability or occupational engagement. However, meaning from Making was associated with higher life satisfaction. This collected data expands the profile of today's Makers and provides information about their relationship to meaning from Making.

Question 1.

The Maker Movement began with a grass root message that *anyone can be a Maker* (Thomas, 2014). Therefore, the Maker Movement should be open to all and representative of all. If the future calls for innovation, and creativity thrives in the diversity of its members then such diversity should be a critical part of this movement. Unfortunately, studies of Maker Faires have

been criticized for its predominantly European-American/White, male, affluent attendance (Maker Media, 2014). This study aimed to capture Makers participating in the Maker Movement through not only Maker Faires, but Makerspaces, and online. Even with these additional avenues of participation the sample was mostly European-American/White, had obtained a bachelor's degree, and were employed with a mean annual income around $54,000.

As part of the Maker Impact Summit of 2013, a group of Maker leaders wrote out the hopes for how the Maker Movement might impact the world. Among these were education, public policy, and citizen science. All of which highlighted the need for underrepresented groups to gain access. One of the possible presented challenges was "helping people feel competent participating in the physical world of science (pg. 25)." Another cited challenge was the lack of examples of the Maker pathway. Whatever the reasons, the Maker Movement continues to fall short in gathering the diverse membership that is craved.

Question 2.

The Maker Movement is displaying diversity in the types of Making active individuals engage in, and the types of Making roles. Many Makers identify a primary craft but describe "playing around" with others. Here a graphic is presented using software that took text responses on Making activities and formulated an image with font size corresponding to the frequency of that response. For example, 3D-printing is the largest word and is most endorsed by this sample.

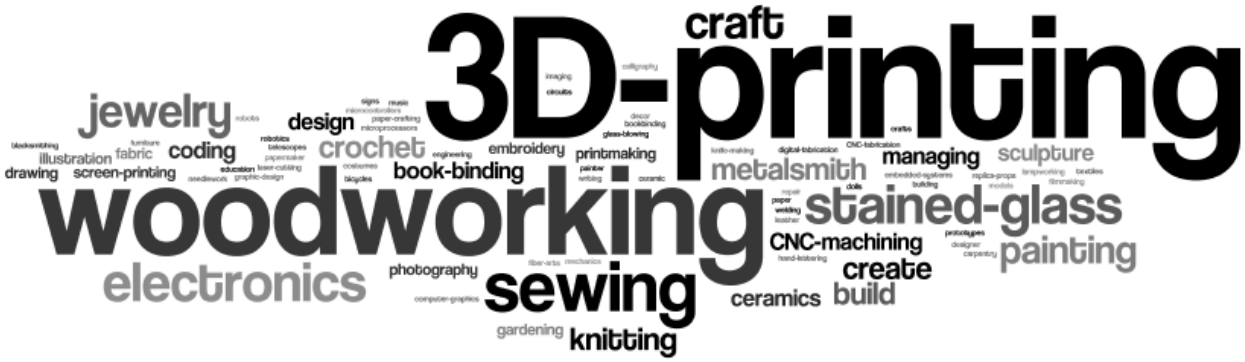

Figure 1

The 2014 Maker Faire survey found 57% of attendees were regularly involved in 3D printing, 33% in photography, 46% in robotics, 27% in woodworking, and 32% in wearables (Make Media). Consistent with past research, many Makers identified a variety of Making activities.

Maker role was also tracked to gain a more complete understanding of a Makers relationship to the Maker Movement. Again, many Makers found themselves endorsing multiple roles like they endorsed multiple activities. Interestingly, 69.2% endorsed being a creator, 62% a student, 93% a mentor, and 38% a sponsor. The rate at which Makers are endorsing creator may reflect a lack of creative self-efficacy, or the belief that one has the ability to produce creative outcomes (Tierney & Farmer, 2002; Beghetto, 2006). Past research has found Makers commenting on not being good enough, making too simple of things, or not being as good as others, as reasons to not be labeled a creator (Bean, Farmer, & Kerr, 2015). However, as Dale Dougherty has explained, people have an easier time identifying as a Maker, but not as an innovator or creator, yet they are one in the same (personal communication, May 5, 2016).

Question 3.

While demographic information provided general descriptive information, statistical tests were used to assess if group differences based on demographic categories existed in

participation. Aligning with the proposed democratic nature of the Maker Movement it is the hope that all groups are represented (Dougherty & Conrad, 2016). Unfortunately, this was not often the case in this research.

The good news. This study found that women are accessing the Maker Movement in equal proportions as men. Perhaps this victory is two-fold, one for the equality of the Maker Movement, and one for the access to science, technology, engineering, and mathematic (STEM) fields. The lack of representation of women in STEM fields has been a focal societal problem for some time. In fact, many interventions have been put in place to help equalize this distribution focusing on things like role models, and early engagement for girls (Syed & Chemers, 2011). In 2011 (Beede, Julian, Langdon, McKittrick, Khan, & Doms), the U.S. Department of Commerce found that less that 25% of STEM jobs were filled by women and described this as untapped opportunity for crucial innovation.

The current study cannot guarantee that all women Makers are working in areas of STEM but access and engagement can be a critical component for the shift of more women in STEM. The Maker Movement can provide both proximity and opportunity. Perhaps interventions to engage women in STEM education and STEM career systems can look to the Maker Movement. It is possible that the Maker Movement allows for a "foot in the door" with members finding access through one activity but gaining exposure to a plethora of Making techniques. The collaborative nature might even bring opportunities of innovation acting as a bridge between the arts and STEM to create STEAM. Or perhaps the nontraditional path towards creation allows for easier access. Whatever the mechanism, the Maker Movement is welcoming both men and women.

The bad news. Ethnic minorities and those with lower socioeconomic status (SES) are not accessing the Maker Movement at equal proportions to their non-marginalized counter parts. The

present research study found 85.5% of participants identified as solely European-American/White. In comparison, the United State census reports 76.9% of Americans are “White alone” (2016), demonstrating the Maker population is more European-American/White than the general public. This study used $33,000 as the cut off for low SES (Beeghley, 2004) and found 30.4% of participants fell at or below this annual income, in comparison to the economic model which estimates 48% of the United States population is earning below that cut off. The Maker Movement has more affluent members than the general public.

Much like the access of STEM fields to women, the need for increased access to ethnic minorities has been a public concern since 1980 when congress passed the Science and Engineering Equal Opportunities Act to strengthen the participation of marginalized groups in STEM. A report released by the National Center for Science and Engineering Statistics (NCSES, 2017) noted despite efforts to engage more ethnic minorities in STEM, the rates at which they are being educated and working in STEM fields are still drastically below that of European-American/White individuals. Although women have begun to close the gap in STEM work, and ethnic-minority women are earning more degrees in STEM than ethnic-minority men, but they have double the unemployment rate of their European-American/White women counterparts. It appears it is not only the Maker Movement that is struggling to welcome ethnic minorities.

As a marginalized group, individuals identified as low SES may have barriers beyond a lack of resources when trying to engage with the Maker Movement. The open access of the Maker Movement allows for Making to be engaged with low- to no-cost online, in public libraries, and through sponsored Makerspaces. However, internet access, transportation, and supply cost may be barriers for someone without money to spare. Federal funding has been provided through grants to support the development of Makers and Makerspaces but typically targets the early and

secondary school populations. If we are a "nation of tinkerers, inventors, and entrepreneurs" we need to support those endeavors at all levels (The White House Office of the Press Secretary, 2016).

Question 4.

Three ways of accessing the Maker Movement were assessed. It was found that Makers are accessing the movement through online resources, and Maker Faires at similar rates. Additionally, both online and Maker Faire participation were used at higher rates than participation through Makerspaces.

Makerspaces could be described similarly to coworking spaces. New coworking spaces allow individuals to rent space in an office were things like printers, whiteboards, and internet are available outside of the home yet without having to afford a whole building and company. Workers outside of the Maker Movement are turning to coworking spaces that facilitate productivity, creativity, in a group of others unlike each other (Hatch, 2013). The founders of the Maker Movement see Makerspaces as critical components for getting whole communities involved with the movement, calling these spaces the "on-ramp" to Making (Dougherty & Conrad, 2016). Are there possible negative effects to Makers not participating through Makerspaces?

Many hoped technology and the world wide web would bring greater sharing of information and the possibility to connect with people despite physical distance. As researchers begin to understand the impact of online communities, comparisons have been made to in-person gatherings. One review found that online interactions are not able to create sustaining relationships as well as in-person, or even phone communication for both social and work relationships (Cummings, Butler, & Kraut, 2002). This internet paradox reflected initial findings

that the belief the internet would strengthen community was not the case, and in fact led to poorer social relationships. Longitudinal data reveal an interaction effect, those who were originally more social found the internet helped to grow and strengthen their social networks both online and in-person. For these individuals the internet served as an additional tool. It was found that for less social individuals more time online was associated with higher levels of stress, and less satisfaction with the current community they physically lived (Kraut et al., 2002). Because the Maker Movement is so focused on community, it is disheartening to understand relationships online are just not the same.

Access to the internet has led to the ability to telecommute, or work remotely. Studies have shown that some workers who telecommute experience feelings of isolation (Sennett, 1998). The opportunity to be away from a specific location may have been beneficial for securing work, but as beings who seek connection and relationships the disconnection from the group had unexpected negative consequences (Josselson, 1992). Perhaps these negative consequences are why so many telecommuters have turned to coworking spaces (Hatch, 2013).

Beyond working remotely, the internet has also allowed for learning remotely. Both work places and education systems have used internet delivery for trainings and lectures. The Maker Movement values learning from others as a way to facilitate the crossbreeding of ideas. The effectiveness of online teaching was supported for students in technology fields in comparison to in-person instruction (Piccoli, Ahmad, Ives, 2001). In particular, for STEM fields researchers support massive open online courses as a way to engage students in the field but also to utilize computerized grading that provides students and instructors with more in-depth and quicker feedback, supporting online learning as an effective alternative to in-person instruction (Linn et al., 2014).

Now with a better understanding that Makers are interacting less with the Maker Movement through Makerspaces, possible opportunity losses can be explored, and how different avenues of participation might shape a Maker's experience.

Question 5.

A relationship was not supported between amount of Maker participation and career adaptability for the total sample, marginalized groups or non-marginalized groups. Career adaptability speaks to an individual's resources to cope with change in vocational transitions. This includes social networks, decision making, and managing emotions (Savickas & Porfeli, 2012). It is expected that an individual high in career adaptability is tuned into personal responsibilities, self-reliance, and has a sense of what is right for them (Konstam, Celen-Demirtas, Tomek, & Sweeney, 2015).

Additionally, the literature reviewed in this study puts an emphasis on relationships and community for both meaningful work, and for navigating work transitions (Blustein, 2011; Erford & Crockett, 2012). Because the Maker Movement is an avenue that brings people together in this grass root community, it was expected to help facilitate career adaptability.

This study looked at the relationship between amount of Maker participation and career adaptability and found no significance. Perhaps it is not the amount of time that is important, but the amount of meaning from Making one receives that might relate to career adaptability. Known long-term predictors of career adaptability include openness, learning goal orientation, and proactive personality (Johnston, 2016). All qualities that would reasonably be expected in the Maker Movement.

Another possibility for these results might be that Makes as a group, despite amount of participation are more adaptable than other individuals. However, without established norms of

the CAAS-USA this cannot be tested at this time. In the initial development of the CAAS-USA a sample of 460 10th and 11th graders were used and had mean individual item scores ranging from 3.36 to 4.19. Similarly, participants in this study had mean individual item scores ranging from 3.03 to 4.12, with a total mean score of 87.32 out of a possible 120.

Question 6.

No relationship was found between Maker participation and occupational engagement for the total sample, for those with a marginalized status, or for those without a marginalized status.

Noble (2008) found that age, level of education, and income were negatively correlated with job curiosity but age, level of education, and income were positively correlated with job involvement, the two subscales of occupational engagement. Because this sample was found to have an average age of 42, a bachelor's degree, and had a mean annual income around $54,000 these factors may have influenced occupational engagement scores. Conceivably, Makers may have higher scores in job curiosity but not job involvement. Job curiosity speaks to an individual's willingness to learn about other job possibilities or other job fields and is much more fitting with the Maker Movement. Job involvement includes the engagement within one's current field. The Maker spirit is one of exploration and innovation through unmarked paths. However, given the sampled demographics of the Maker movement perhaps the split on type of occupational engagement would be more dependent on marginalized status.

Similar to the CAAS-USA, normative scores for the OES-EA-R have not been established therefore, it is possible that all Makers are scoring on average higher or lower than the general adult population.

Question 7.

The current examination of life satisfaction in relation to Making returned mixed results as expected. For the total sample of Makers, amount of participation did not relate to amount of life satisfaction. However, the amount of meaning one derives from Making was associated with increased levels of life satisfaction. This suggests the subjective experience of Making is more important than amount of time spent creating. Despite this overall finding, those who identified as ProMakers displayed a similar, yet smaller, associated benefit with meaning from Making being related to life satisfaction.

In this study meaning for Making included: contributing a difference in the world through Making, gaining better understanding of the self through Making, and providing a sense of purpose. As described in the introduction, throughout history vocation has helped to provide meaning in an individual's life. These results suggest participation in the Maker Movement, Making, too has the ability to help develop identity or purpose. However, to the benefit of the greater society, entrance into Making does not come at the approval or opportunity given by another – unlike job prospects which often require an application and acceptance process. As Richardson (2012) points out there is a need for broader access to meaningful work. This initial evidence supports an avenue towards meaningful work through the Maker Movement.

Knowing that the interpretation of a meaningful job experience is subjective, the variability of Making not only lends itself to the needed flexibility between individuals but the needed flexibility between time points in an individual's life. Transitions in market work are occurring more frequently and predictability is non-existent (Bolles, 2011). Because Making does not have to be connected to the economy the metamorphosis of Making can be much more linked to the individual without lapses in meaningful work.

The contributing factors in the relationship between Making and life satisfaction might be broader than work. In fact, Argyle (2001) found satisfaction with life was predicted by both having engaging work and leisure. Making has been described as both. However, those who are more eudaemonic (focused on the process of achieving/life of meaning) find it easier to obtain life satisfaction compared to those who are more hedonic (focused on pleasurable moments). Those who are more eudaemonic happiness have been found to spend more time working on developing their potentials and learning new skills (Huta et al., 2003). Perhaps, a characteristic of a Maker (artist, innovator, tinkerer, etc.) is having more eudaemonic happiness, and therefore, greater life satisfaction than those with hedonic happiness. This is consistent with previous research which argues life satisfaction is increased by goal progress, environmental resources, self-efficacy, and positive affect (Rain, Lane, & Steiner, 1991).

Finally, the link between Making and life satisfaction may have bi-directional benefit. As affluence begins to increasingly hit a level of sufficiency within the Western world, more individuals strive for life satisfaction above monetary gain (Boniwell, 2009). Well-being has been shown to increase creativity, and divergent thinking, as well as multitasking abilities. All of these cognitive skills would be valuable within the Maker Movement (Diener, 2001).

In the Words of Makers.

In order to shed light on the experience of a Maker, participants in this study were given space to provide "comments about your Maker participation." These comments revealed themes of enjoyment, identity, community, and therapeutic benefits. As meaning from Making was found to be related to life satisfaction, it is little surprise that Makers commented on variables that relate to life satisfaction (Boniwell, 2009). A sampling of comments is presented here. When speaking about Making, participants commented on experiences such as; "I absolutely love what

I do," "rewarding and challenging," "personal satisfaction and expression," and "to Make something that works from material is a great feeling." Makers also commented on the identity Making brings; "I've been a tinkerer, hobbyist, crafter, hacker, artist, developer, as soon as I could pick up a tool. It keeps me alive," "when I heard the term 'Maker' for the first time, I said, 'yes, that is what I am," "Making really gave me a purpose," and "Making is a way to make life meaningful." In addition to identity, Makers find the community of the Maker Movement to be an asset; "the experience is amazing as I learn and teach and discover the amazing people around me," "at first, I was resistant to the 'movement' but now I fully embrace it, the community have been great," and "what I primarily appreciate about Makerspaces is community involvement." Finally, Makers spoke of the therapeutic benefits of the movement; "I see it vital to have a creative outlet for my psychological well-being," "I do it for my own personal growth," "painting keeps me sane, literally, 18 months into painting, I've been off antidepressants for about a year," "provides balance, therapy and creativity," and "soothed the soul."

Limitations

Wide definition of Maker.

When measuring constructs researchers work to operationalize their key constructs. This helps to eliminate confusion in definition and communication, as well as to minimize covariance with other constructs (Burns & Dobson, 2012). While capturing the open spirit of the Maker Movement the self-identified, inclusive term of Maker raises research complications. To be identified as a Maker there is no requirement for amount of time, for type of activity, for amount of enjoyment, for amount of internalized identity, or for amount of meaning experienced (Dougherty & Conrad, 2016). Therefore, an individual who is regularly involved in the Maker Movement, Makes 14 hours a week, and does wood working, 3D-printing, and sculpture is as

much a Maker as someone who knows of the Maker Movement, enjoys the spirit, and paints every few months. It would be assumed these individuals experience Making very differently, and yet are operationalized as a Maker the same.

Non-experimental methods.

The nature of survey data collection does not allow for casual claims (Burns & Dobson, 2012). Therefore, any presented relationships cannot be said to be an effect of Maker participation rather, connected to Maker participation. Perhaps individuals who experience higher levels of life satisfaction are more likely to derive meaning from activities, and therefore experience higher levels of meaning from Making. While survey data did allow for descriptive information to be presented, as this study set out to explore the demographic composition of the Maker movement, its limitations are with the attempt to explore relationships between Making and career variables, as well as Making and life satisfaction.

WAMI to MAMI.

In order to assess meaning from Making a preexisting meaning from work measure was modified. While extended steps were taken to establish content validity by a panel of experts in the Maker Movement, because this measure has not been given to assess Maker meaning previously, validity is of concern (Burns & Dobson, 2012). Additionally, this measure was to be compared to a single, face valid, meaning-from-making item however, this item did not provide enough variance to be compared to the new Meaning from Making Inventory.

Lack of normative data for the OES and CAS.

While one of the strengths of the CAAS-USA was the creation and validity to be used in over 13 countries, average scores for the USA have not been provided. Additionally, group norms for the OES-EA-R have not been established. Therefore, this research study is not able to

compare Makers to other adult groups on either the CAAS-USA or the OES-EA-R. While the amount of Maker participation was not found to relate to amount of career adaptability or occupational engagement, it is possible that Makers as a group differ significantly from other adult groups on normalized mean scores.

Suggestions for Future Research

Much like the infancy of the Maker Movement itself, the research on this group is left open for exploration and development. This study only begins to help understand this community and how it might interact in the grander scheme of vocation, innovation, mental health, and social justice.

Groups of Makers.

The present study describes different ways in which Makers participate in the Maker Movement: at Makerspaces, at Maker Faires, and on-line. This research explored the differences in how Makers engage with the movement. The Maker Movement relies on learning from others to create growth in the movement. Makers describe important relationships of mentors, teachers, and friends, as part of the support provided by the Maker Movement (Thomas, 2014). Given the underlying theme of community, future research should investigate how the different levels of community belonging in Making relate to the amount of meaning someone derives from Making.

Additionally, exploration is warranted to understand the differences between Pro-Makers and Makers. For example, this study revealed a smaller effect size between meaning from Making and life satisfaction for Pro-Makers, than Makers. Future studies should look to categorize Makers based on current employment status, both in and out of the Maker Movement, to better understand the potential relationship between Maker engagement and career decision making variables.

Meaning over amount of participation.

As the relationship to life satisfaction revealed, meaning from Making might be a more predictive variable than amount of Maker participation. A logical assumption would be that amount of meaning one derives from Making is connected to the reasoning behind why an individual entered the movement. For example, someone who recently lost a job might experience a different narrative behind meaning from Making than someone who Makes as an addition to market work.

Also, worth exploration, is how Making relates to the different subscales of occupational engagement. Because occupational engagement includes both the search of possible career options (job curiosity) and the involvement one has to their current job field (Krieshok, Black & McKay, 2009), it would be important to understand how Making, and meaning from Making, influences each sub-construct separately.

Marginalized groups in Making.

A question that began after initial exploration of Maker Faire attendance (Maker Media, 2014), continues after the results of this current study. Why might a movement so dedicated to all-inclusive membership have such little member diversity? Researchers might be guided by the work on access to STEM to begin the exploration of what participation barriers exist. For example, the STEM research related to access for underrepresented minorities highlights the lack of exposure in elementary- and secondary-education systems as well as information and learning at all levels (Sander & Taylor, 2012).

Other positive psychology variables.

Given the relationship between meaning from Making and life satisfaction, future research should investigate how Making relates to other optimal functioning variables (e.g.,

strengths and virtues, flow, positive coping). Implementation of positive psychology in the workplace might look like the facilitation of autonomy, self-direction, and meaningfulness for workers and is related to well-being, creativity, and productivity (Boniwell, 2009). Upcoming research should assess levels of positive psychology variables within the Maker population.

Implications for Future Practice

Career decision making was once focused around matching a person to the single perfect career but now focuses on flexibility within a transitioning market world (Krieshok, Black, & McKay, 2009).

Career counseling continues to be separated from general psychotherapy even though the overlap of work variables and overall life variables becomes increasingly evident. Instead of focusing on career placement or transition, career counseling methods might merge with a more general experience of the client. Blustein (2006, p.245), describes this integration as vocational psychology, "which seeks to help clients explore their options, values, and abilities, with respect to work." One possible incorporation technique was created by Ben-Sharar (2007), and asks three questions in hopes to target well-being; 1) what gives me meaning, 2) what gives me pleasure, and 3) what are my strengths. Clients are encouraged to find activities that combine more than one of these questions. Such activities could be easily filled by market work, or personal-care work. Making might serve as an activity that provides meaning, and pleasure, and utilizes an individual's strengths.

Vocational exploration as part of more general therapy might look like an exploration of transferable skills to empower the client (Bolles, 2011). This is even more critical for unemployed individuals looking to reenter a workforce with needs mismatched to the individual's skills, requiring a wide variety of possibilities outside of one's comfort zone (Kahn,

2004). Psychoeducation about globalization might be provided to clients, highlighting the need for community and the abilities for people in similar vocational roles to join together in developing innovative uses for their particular skill set (Blustein, 2006). Therapists knowledgeable about the Maker Movement might be able to provide this path as an avenue to explore and develop skills, and connect with community.

Advocacy for access.

This study found if an individual can find meaning from Making it is expected they will also have increased levels of life satisfaction, without having to dedicated large amounts of time to the Making activity. However, membership to the Maker Movement appears to be predominantly occupied by individuals in majority groups. In order to promote access to this movement, and its benefits, it is suggested that Making classes continue to be developed at every level (Sander & Taylor, 2012). Entry to the movement can be facilitated by the learning process but must be welcoming to individuals without prior skill sets, and with limited financial resources. This helps to reinforce the Maker spirit that anyone can Make. While non-profit Makerspaces continue to be developed in schools, public libraries, and communities it is important to consider the availability to new Makers, Makers of all ages, Makers of all genders, Makers of all ethnicities, and Makers of all income levels (Dougherty & Conrad, 2016). Making is about innovation. Innovation and creativity are fostered by diversity (Paulus & Nijstad, 2003).

Conclusion

Given the new landscape of the world of work, including increased job transitions and restructuring by the digital world, creative navigation approaches must be explored (Hall, 1996). The Maker Movement emerged in 2005 and presented itself as a new pathway for career journeying. While the Maker Movement has grown in participation, little development has

occurred through academic investigation of the possible impact of this movement prior to this study. An investigation of the relationship of Making to career development was begun. And, further exploration was completed to understand the impact between Making and life satisfaction.

This study supported a relationship between meaning from Making and life satisfaction, regardless of Pro-Maker status. Individuals who experience more meaning from Making also experience greater levels of life-satisfaction. Interestingly, no relationship between Maker participation and career adaptability or occupational engagement was found. However, this relationship was explored using amount of Maker participation as it related to the career variables.

A more complete demographic picture of those participating in the Maker Movement was also supported. Consistent to prior research, Makers tend to be European-American/White, hold a college degree, are employed, and have a mean personal income of roughly $54,000. In contrast to prior research, this study found that women are participating at equal rates as men. Also explored were the avenues in which someone might engage in the Maker Movement, and it was found that Makers are more likely to engage with a Maker Faire or online, than at a Makerspace.

In conclusion, this study provided an academic foundation for better understanding the possible benefits of the Maker Movement and provides many directions for future research. This research adds to the idea of the Maker Movement as new pathway for psychological enhancement that counselors and therapists can use to increase their clients' access to meaningful work and community.

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Appendix A

Demographics Questionnaire

	Question	Response Options
1	Age	(fill in)
2	Gender	Female, Male, Other/Fluid
3	Current Marital Status	Single, Married, Divorced, Widowed, Separated, Unmarried and living with partner
4	Sexual Orientation	Straight, Bisexual, Gay, Asexual
5	Ethnicity	(select all that apply) African/African-American/Black, Asian/Asian-American, European-American/White, Latino/Hispanic, Native American, Other (with fill in)
6	Personal Annual Income	(fill in)
7	Education Level	(select highest level of completion) no high school, some high school, high school diploma, received GED, some college, associates degree, bachelor's degree, graduate degree, other certificates (with fill in)
8	What is your primary Maker activity?	(fill in)
9	How would you describe your skill level in your primary Maker activity?	Novice 1, 2, 3, 4, 5, Expert
10	Please list all other Maker activities in which you participate.	(fill in)
11	How many Maker Faires have you attended?	(fill in)
12	Are you currently employed for pay?	Yes, No, Unsure
13	Is your work related to your Making activity?	Yes, No, Unsure
14	Number of months participating as a Maker	(fill in)
15	Have you ever sold anything you've made in the Maker Movement?	Yes, No, Unsure
16	Please estimate the amount of money you have made through the Maker Movement.	(fill in)
17	Are you employed for pay outside of the Maker Movement?	Yes, No, Unsure
18	What is your job title?	(fill in)
19	How many months have you been employed in your current occupation?	(fill in)
20	On average, how many hours per week do you spend in paid employment?	(fill in)
21	How many careers have you had this far?	(fill in)
22	On average, how many hours per week	Yes, No, Unsure

	do you spend working on your Maker activity/activities?	
23	Have you ever visited a Makerspace?	Yes, No, Unsure
24	Are you affiliated with a Makerspace?	Yes, No, Unsure
25	How many months have you participated in activities at a Makerspace?	(fill in)
26	On average, how many hours per week do you spend at a Makerspace?	(fill in)
27	How have you participated in the Maker Movement?	(select all that apply) Creator, Sponsor, Mentor/Teacher, Student
28	On average, how many hours a week do you spend researching your craft?	(fill in)
29	On average, how many hours a week do you spend talking (in person or online) with someone about Making?	(fill in)
30	Have you ever visited makezine.com?	Yes, No, Unsure
31	How strongly do you identify with being a Maker?	Do Not Identify 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 Strongly Identify
32	Do you consider your Maker activity a personal calling?	Yes, No, Unsure
33	I enjoy my tie spent participating in the Maker Movement.	Strongly Disagree 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 Strongly Agree
34	I consider myself a Maker (tinkerer, hobbyist, crafter, hacker, artist, developer, etc.)	Strongly Disagree 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 Strongly Agree
35	Does making things contribute to meaning in your life?	Yes, No, Unsure
36	Does making things contribute to meaning in your life?	Yes, No, Unsure
37	Comments about your Maker participation	(fill in)

Appendix B

Career Adapt-abilities Scale - USA

Instructions: Different people use different strengths to build their careers. No one is good at everything, each of us emphasizes some strengths more than others. Please rate how strongly you have developed each of the following abilities using the scale below.

	Abilities	Strongest	Very Strong	Strong	Somewhat Strong	Not Strong
1	Thinking about what my future will be like					
2	Realizing that today's choices shape my future					
3	Preparing for the future					
4	Becoming aware of the educational and vocational choice that I must make					
5	Planning how to achieve my goals					
6	Concerned about my career					
7	Keeping upbeat					
8	Making decisions by myself					
9	Taking responsibility for my actions					
10	Sticking up for my beliefs					
11	Counting on myself					
12	Doing what's right for me					
13	Exploring my surroundings					
14	Looking for opportunities to grow as a person					
15	Investigating options before making a choice					
16	Observing different ways of doing things					
17	Probing deeply into questions that I have					
18	Becoming curious about new opportunities					
19	Performing tasks efficiently					
20	Taking care to do things well					
21	Learning new skills					
22	Working up to my ability					
23	Overcoming obstacles					
24	Solving problems					

Scoring: Total Score. Higher scores indicate more career adaptability.

Appendix C

Occupational Engagement Scale for Employed Adults – Revised
Instructions: How well does each statement describe you? Please note responses can range from "Not at all like me" to "Very much like me."

	Statement	Not at all like me		Somewhat like me		Very much like me
1	I have talked with others about what I want in my "dream job."					
2	I daydream about career possibilities.					
3	I network with people working in jobs I'm curious about.					
4	I let friends know that I am open to exploring other jobs.					
5	I imagine how another job might feel.					
6	I look for ways my strengths might apply to different kinds of work.					
7	I have talked to someone about the steps needed to pursue a job I might be interested in.					
8	I push myself to find jobs that pay more.					
9	I picture the kind of like I might have with a different career.					
10	I push myself to find positions that are more satisfying.					
11	I network with people in my field.					
12	I am a member of professional or work organizations.					
13	I talk with colleagues or co-workers about current events in our field.					
14	I attend conferences, workshops, or trade show related to my work.					
15	I can describe my work skills in detail.					
16	I talk with others about new development in my field.					
17	I am involved in a work-related organization.					

18	I am fixed on my career path.					
19	I maintain lots of contact with people in my life of work.					
20	I pursue training to be more effective in my job.					

Scoring: Higher scores indicate higher occupational engagement.

Appendix D

The Making (Work) and Meaning Inventory
Instructions: Making can mean a lot of different things to different people. The following items ask about how you see the role of Making in your own life. Please honestly indicate how true each statement is for you and your Making.
(Work can mean a lot of different things to different people. The following items ask about how you see the role of work in your own life. Please honestly indicate how true each statement is for you and your work.)

		Absolutely Untrue	**Mostly Untrue**	**Neither True nor Untrue**	**Mostly True**	**Absolutely True**
1	I have found a meaningful Making activity.	1	2	3	4	5
W	I have found a meaningful career.					
2	I view my Making as contributing to my personal growth.	1	2	3	4	5
W	I view my work as contributing to my personal growth.					
3	My Making really makes no difference to the world.	1	2	3	4	5
W	My work really makes no difference to the world.					
4	I understand how my Making contributes to my life's meaning.	1	2	3	4	5
W	I understand how my work contributes to my life's meaning.					
5	I have a good sense of what make my Making meaningful.	1	2	3	4	5
W	I have a good sense of what make my job meaningful.					
6	I know my Making makes a positive difference in the world.	1	2	3	4	5
W	I know my work makes a positive difference in the world.					
7	My Making helps me better understand myself.	1	2	3	4	5
W	My work helps me better understand myself.					
8	I have discovered Making that has a satisfying purpose.	1	2	3	4	5
W	I have discovered work that has a satisfying purpose.					
9	My Making helps me make sense of the world around me.	1	2	3	4	5

W	My work helps me make sense of the world around me.					
10	The Making I do serves a greater purpose.	1	2	3	4	5
W	The work I do serves a greater purpose.					

Note: This is an adaptation of The Work and Meaning Inventory (WAMI) (Steger, Dik, & Duffy, 2012)

Scoring: Scores can all be added together, reverse scoring item 3, to get the test-taker's overall Meaningful Making (work) score. The Meaningful Making (work) score reflects the depth to which people experience their Making as meaningful, as something they are personally invested in, and which is a source of flourishing in their lives.

Appendix E

Satisfaction with Life Scale

Instructions: Below are five statements that you may agree or disagree with. Using the 1-7 scale below, indicate your agreement with each item. Please be open and honest in your responding.

		Strongly agree	**Agree**	**Slightly agree**	**Neither agree nor disagree**	**Slightly disagree**	**Disagree**	**Strongly disagree**
1	In most ways my life is close to my ideal.	7	6	5	4	3	2	1
2	The conditions of my life are excellent.	7	6	5	4	3	2	1
3	I am satisfied with my life.	7	6	5	4	3	2	1
4	So far I have gotten the important things I want in life.	7	6	5	4	3	2	1
5	If I could live my life over, I would change almost nothing.	7	6	5	4	3	2	1

Scoring: Total score. Higher scores indicate higher levels of life satisfaction.