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Disciplines

Business

Comments

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The unrelenting high unemployment/underemployment rates following the 2008 recession have become a possibly structural problem for the U.S. economy. Today's jobseekers face many difficulties, some of which may be better addressed by understanding the mental models held by jobseekers towards being unemployed and underemployed. Rule developing experimentation identified three types of mental models towards unemployment: "I'm out of date", "I still got it", and "I need to adapt". Each mental model carries with it suggestions about what customized courses of action policymakers can recommend for the individual. This paper discusses the findings and implications for policymakers and unemployment/underemployed service providers.

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1. INTRODUCTION

The U.S. has been facing unrelenting high unemployment and underemployment rates since the Great Recession of 2008, with approximately 16.2% of today's population labeled as underemployed, of which 7% are unemployed (Gallup Economy, May 14, 2014). Although policymakers have made various efforts to relieve this problem by assisting jobseekers in the labor market (e.g., Abramovsky et. al 2011), high unemployment and underemployment still persists, generating numerous negative consequences for individuals and societies (e.g., Koena, Kleheb, and Van Vianena 2013). Policymakers are not considering the reactions of jobseekers – those unemployed or underemployed – when making policy recommendations. This hampers noticeable progress because policymakers are failing to devise strategies that will be favorable to jobseekers. This paper proposes that a more effective approach for policymakers in designing strategies for assisting unemployed and underemployed people requires a carefully investigation of the mental models of unemployment.

Most research studies on assisting jobseekers focus on policy, training, and re-employment tactics and traits for succeeding in the job search (Acemoglu and Robinson 2013), but these studies fail to understand one valuable underlying aspect: they lack any understanding of mental models, what heterogeneous people carry around in their heads about their own employability and the actions they should take in the face of employment challenges. It is not enough to study only the supply and demand sides of the labor market (e.g., Antonovics and Golan 2012) because the labor market are heterogeneous; policymakers need to also gain deeper insight into the inner realities and different worldviews of the jobseekers affected by this unemployment/underemployment problem, and then design policies and programs that meet the

needs of individuals given their different mental models. Examining mental models is necessary to meaningfully assist jobseekers and successfully bolster the U.S. economy.

We will begin by giving an introduction of what mental models are and why they are important, followed by a detailed description of what the rule developing experimentation method is. Then, we will explain how we conducted our exact methodology and present our actual survey findings. This paper will conclude with a discussion of what implications our findings have on future policymaking for this problem of unemployment/underemployment.

Importance of Mental Models

Prior to the 1950s, it was conventionally believed that running a mile in under four minutes was impossible. Then, in 1954, Roger Bannister broke that “four minute mile” barrier. And two months later, subsequent other runners also broke that barrier¹. Nothing changed during that short time period except for people’s mental models (Wind and Cook 2006).

Although we observe the world with our senses, our mental models are what give meaning to our observations. Mental models can be thought as the inner representations that our minds generate about specific people, places, things, and ideas of the world in general (Wind and Cook 2006). Created by our knowledge and prior experiences, they are the lenses through which we understand the world. As exemplified in the four minute mile barrier example, mental models are powerful enough to influence and even limit our capabilities. Although mental models do not physically determine our limitations, they can create mental barriers which may prevent us from achieving an otherwise feasible goal.

¹ Cavendish, Richard. 2004. The First Sub-Four-Minute Mile. *History Today* 54, no. 5. Online text found at: <http://www.historytoday.com/richard-cavendish/first-sub-four-minute-mile> (accessed May 5, 2013).

Despite the importance of mental models, people are usually not aware of their mental models or the roles that they play in their lives (Wind and Cook 2006). We mistakenly think that what we see in the world is reality, but we actually see what our mental models direct us to see. If our mental models are inaccurate, then we consequently will see reality inaccurately and miss opportunities, overlook threats, or overreact to events. Therefore, it is quintessential for us to be aware of the mental models that people hold and to consistently compare them with reality to ensure that we have correct outlooks on the world. Failing to have accurate mental models will result in poor interpretations of reality and, consequently, incorrect beliefs about and inappropriate reactions to the world.

Given America's unemployment crisis and the importance of mental models, a first step towards effectively helping jobseekers is to uncover the range of mental models they hold towards unemployment. Doing so will give us insight into people's implicit capabilities and limitations which we can use to direct our policy decisions. We are interested in examining the mental models towards unemployment of both the employed and under/unemployed and seeing if any differences between or within those groups exist. Within group differences will be especially useful because different people tend to have different mental models; once we identify the different mental models that people have, we can then develop segmentation criteria that will segment jobseekers into homogenous groups based on their mental models. Hence, because people with similar mental models are likely to exhibit similar actions and patterns of responses, this will then allow us to formulate policies and unemployment services that better cater to the needs of jobseekers in each mental model segment.

This study focuses on the everyday person's mental models towards unemployment – the experience of being unemployed and/or underemployed – which we can use to better assist

jobseekers in today's job market. One may liken this study to how companies conduct studies to understand consumers and then design new products using their empirical insights. Our study will focus on assisting the unemployed and underemployed jobseekers, as they are the immediate people affected by this unemployment crisis. The findings from this study can benefit the unemployed, public policy makers, and employers, as all three of these audiences will need to use insights from mental models to cope with and solve the unemployment problem altogether.

2. EXPERIMENTATION

Rule Developing Experimentation

We focused on the empirical construction of the current mental models towards unemployment by conducting a study of a sample from the general population using rule developing experimentation (RDE). A systematized process of experimentation which utilizes conjoint analysis by examining the performance of individual elements or ideas in a more natural setting (Moskowitz and Gofman 2007), RDE grew out of conversations with and inspirations from Paul Green and Jerry (Yoram) Wind from the Wharton School (Moskowitz and Gofman, 2007) and was designed as a commercial process to systematize knowledge based upon experimental design of ideas. This method can be used to generate a profound understanding of the mental models that people have towards unemployment and segment respondents by mental model types.

Using the psychological approach known as S-R, stimulus-response, RDE combines survey techniques with experimental design of stimuli. This approach involves systematically mixing together different elements into combinations, called vignettes, so that individual elements compete to drive the response to the stimulus. Each respondent sees a unique set of

vignettes but all respondents see the same elements. For the particular design used in this study, each element appears five times within different vignettes. With the stimuli completely randomized in this manner, respondents cannot “game” the system, thus eliminating bias.

The full RDE approach, developed by Howard Moskowitz and illustrated in his book, *Selling Blue Elephants*², involves the following eight steps:

Step 1: “Dissect” the topic of interest into categories and individual elements.

Categories are general groups of ideas which cover different dimensions of the topic of the experiment. The elements represent an array of ideas related to the topic and are expressed in consumer language, not in the language of the expert. To create the six categories or general groups (also known as variables), we deconstructed the topic, cutting the information about the topic into simple, easy to understand elements. Related elements are placed into the same category and each category comprised of the same number of elements.

Step 2: Create the test profile using the selected elements.

The prototypical profile comprises a minimum of three and a maximum of four elements, no more than one element per category. The profiles are incomplete by design, a property which allows us to estimate the absolute contribution of each element to the rating.

Step 3: Select the dependent variable(s) on which the respondent will rate the different profiles

The selected dependent variable is often the strength of attraction of ideas about the specified topic, such as “How well do these statements describe me” or “Do you expect [the topic of interest] to have these elements”, and are typically measured on a 1-9 scale

Step 4: Input both the test profile and dependent variable(s), referred to as the RDE protocol, into the presentation/analysis program, IdeaMap.Net®.

² Moskowitz and Gofman, *Selling Blue Elephants*

IdeaMap.Net creates test profiles, called vignettes, using an experimental design. The design calls for 48 different profiles for each respondent. Every element appears five times in the 48 profiles, with the elements arranged so that they are statistically independent of each other. The statistical independence will be useful when the elements are related to ratings by OLS (ordinary least-squares) regression.

Step 5: Collect the data.

Respondents are presented with the vignettes and asked to rate them on the scales created in Step 3. The respondents are typically recruited through commercial online panel companies, or through arrangements with a company's customers, professional associations, and other similar groups.

Step 6: Analyze the data and create the Persuasion Model.

After collecting the data, the ratings of the dependent variables are first transformed to the binary scale, where ratings of 1-6 are transformed to 0, and ratings of 7-9 are transformed to 100, so that they are easier to work with. Ordinary least squares (OLS) regression is then used to estimate the contribution of each element to the overall rating. The contributions of the elements, also referred to as impact values, are the coefficients from the regression equation. The OLS regression is conducted at the individual respondent's level and the individual impact values are averaged across the respondents.

Step 7: Create segments from the data.

OLS is used at the individual-respondent level to create another model that relates the presence/absence of the 36 elements to the original 9-point rating. The coefficients of this second model are used by a clustering program to create clusters/segments based upon the similarity of patterns of responses to the elements; individuals that have similar

patterns are placed into the same cluster. The clusters must be parsimonious (the fewer the number of clusters, the better the segmentation) but, at the same time, the clusters must be interpretable (i.e., they must tell a ‘coherent story’).

Step 8: Assign a new person to a cluster or segment.

After identifying the clusters/segments, any new person can be assigned to a segment using a short set of questions and a typing tool. First, questions based upon elements used in the clustering are selected by an analytic routine called Discriminant Function Analysis (DFA). DFA identifies the questions that are most essential for separating the respondents into the segments that they populated and creates a set of classification functions called a typing tool. These functions are then applied to the selected questions and either assign the new person to one of the segments or, if the person’s responses to the questions are aberrant, conclude that the person cannot be assigned to a segment. This typing tool for assigning individuals to segments is used only after the completion of the study.

Conceptual Foundation for Selecting the Categories and Elements

Our topic of interest is unemployment and, using existing research publications and academic articles, we dissected it into six categories with six elements each. The categories and elements were selected through discussions among the authors with some informal consults with outside subject matter experts.

Category A is “how I look at the job market” since how individuals perceive the current job market plays an important role in determining their unemployment experiences. Studies have shown that those who are currently searching for jobs are likely to feel less positively about the

job market and exhibit more distress and psychological problems than employed workers (e.g., Paul and Moser 2009). The elements in this category were selected to represent the gamut of the different perspectives – both positive and negative – that people could have towards finding jobs in the job market. How people cope with unemployment situations depends on their individual unemployment stories (Blustein, Kozan, and Connors-Kellgren 2013), and these person-to-person variations suggested the need for having a spectrum of different elements to describe people’s attitudes towards unemployment. For instance, an optimistic person would think that “jobs are out there for me” whereas a skeptical person would be more doubtful, thinking instead that “jobs come and go...I’ll always be hunting [for one]”.

Category B is “how I think about employers” because how individuals perceive their employers also affects their unemployment experiences. The average unemployed worker devotes a substantial amount of time to job search (Krueger and Mueller 2010), but individual times vary significantly (Krueger and Mueller 2012). The variation in the intensity of a job search is correlated with individuals’ expectations of employers: for example, an individual who expects loyalty from the previous employer is substantially less intense in the job search than an individual who does not expect loyalty from the previous employer (Krueger and Mueller 2010). Thus, we chose the elements in this category to capture an array of the possible views that people could have towards employers and companies. Most of the views that people have are likely negative (e.g., “employers want loyalty...but don’t give it”), given that the nation’s employment rate has not improved, but some could be more hopeful (e.g., “employers need worker”).

The third and fourth categories pertain to individuals’ personal thoughts, namely “how I think about myself” (Category C) and “how I think about my skills/experience” (Category E). We chose these categories because we recognize the importance and influence that personal

thoughts can have on one's attitudes towards unemployment. In particular, how one thinks about oneself is strongly affected by one's employment status. For instance, not only do unemployed people have significant losses in self-esteem and in one's quality of life (Knabe and Ratzel 2011), but people's well-beings also drop after becoming unemployed or underemployment (Clark 2003). However, although individuals who have experienced unemployment overwhelmingly expressed dissatisfaction with their lives, particularly during their job search process (Krueger and Mueller 2011), and had more negative expectations of the future (Knabe and Rätzl 2011), employment status does not necessarily determine how positively or negatively one perceives oneself; not all unemployed people have to face unhappiness. In fact, the more positive people's attitudes about themselves are, the more likely they are to return to work faster (Wanberg 2012), whereas the more negative people's attitudes are, the less likely they are to find employment quickly.

Similarly, people's attitudes about their personal skills and abilities can also impact their job search experiences. Not only does having positive attitudes (e.g., hope, optimism) often lead to having higher levels of perceived employability (Chen and Lim 2012), but having positive visions of future opportunities have been found to stimulate success in the job search process (Vansteenkiste, Verbruggen, and Sels 2013). And like before, unemployment only predisposes one towards unhappiness; it does not guarantee that one will have negative attitudes about one's abilities. The psychological effects of the Great Recession are not uniformly distributed across different demographic groups (Hoynes, Miller, and Schaller 2012), thus showing that there is substantial variability in attitudes. The elements for Categories C and E were selected to represent the range of positive and negative attitudes that people could have towards themselves and their skills/experiences.

Category D, “My support systems”, captures the view that people’s support systems also contribute to their unemployment experience. In today’s job market, social networks play an increasingly important role and often help workers find jobs (Hellerstein, McInerney, and Neumark 2011). In fact, jobseekers with close support systems are reported to have more favorable job search outcomes (Cingano and Rosolia 2012). The six selected elements represent the differing levels of possible support systems, ranging from a lack of outside support (“I feel more and more isolated”) to full support (“Family and friends keep me going”).

Furthermore, Category F is “how I search and apply for jobs” because the search goals of the jobseekers also contribute to their job search experiences. Not all people have the same job preferences or attitudes towards the search process, and those preferences and attitudes can influence how they navigate the job market. For instance, studies have shown that those who search for jobs similar to their previous jobs tend to experience less stable employment patterns than their counterparts (Caliendo, Tatsiramos, and Uhlendorff 2013). We selected elements that offered a comprehensive view of the various beliefs that people could have regarding the job application/search process.

The six categories that we created, based on our literature review, form a conceptual foundation and logical progression of what contributes to people’s job search experience. They are meant to capture the full experience of being unemployed/underemployed. Moreover, the elements were selected to give a more complete view of the unemployment/underemployment experience. Table 1 shows the 6 categories and 36 elements used in this study.

Category A: How I Look at the Job Market	Category D: My Support System
A1 The job market is like a casino	D1 Family and friends keep me going
A2 Jobs are out there for me	D2 I feel more and more isolated
A3 Job requirements are so specific...matching them is tough	D3 Unemployment insurance ... absolutely necessary
A4 Jobs come and go so fast...I'll always be hunting	D4 Every expense or purchase ... carefully considered
A5 Companies aren't offering careers anymore	D5 Employment services ... treat me like a number
A6 Many jobs are found through social networks	D6 My social network friends support me
Category B: How I think about Employers	Category E: How I think about my Skills/Experience
B1 Employers need workers...but are slow to hire	E1 My skills need updating
B2 Companies prefer consultants and part-timers	E2 I have the skills employers want
B3 Jobs don't offer the pay or benefits they should anymore	E3 I need to be retrained for today's jobs
B4 Companies view employees as costs...not assets	E4 It's time for a new career
B5 Employers want loyalty...but don't give it	E5 I don't have enough experience
B6 Employers want to interact on social media before hiring	E6 I need to up my skills with social networks
Category C: How I think about Myself	Category F: How I Search and Apply for Jobs
C1 I worry about my future	F1 I'm looking for a job like the one I had
C2 I will do everything to get through this	F2 I look for any job I might be qualified for
C3 I'm more capable than my resume shows	F3 It's hard to stand out
C4 My job defines me	F4 Finding jobs...I feel like I'm on my own
C5 I should not be in this position	F5 Contacts and referrals...more important than job searching
C6 My social network...many valuable contacts and opportunities	F6 Employers should find me...by searching my online profiles

Table 1. The categories and elements of the jobseekers study.

Our Methodology

We chose the dependent variables to be: (1) how well the vignette describes the respondent, measured using a Likert scale of 1-9, and (2) what emotion, from a list of five (angry, happy, anxious, hopeful, and calm) the respondent feels when rating each specific test profile. The selected emotions represent positive (happy, hopeful), negative (angry, anxious), and neutral (calm) feelings.

After programming in the RDE protocol, the IdeaMap.Net® system generated a unique set of 48 vignettes/test profiles for each respondent to rate. Each respondent saw a unique set of

the 48 vignettes. Figure 1 shows an orientation page which instructs the respondent to consider the combination of elements as a single vignette and rate it based on the two criteria.

My job defines me

I have the skills employers want

I'm looking for a job like the one I had

How well does this screen describe your outlook today?

1 2 3 4 5 6 7 8 9

1=Does not describe me at all ... 9=Describes me perfectly

After reading this screen, how do you feel RIGHT NOW?

1 2 3 4 5

1=Angry 2=Happy 3=Anxious 4=Hopeful 5=Calm

Figure 1. An orientation page.

The respondents of the study comprised a sample from the general population of people connected to the labor force, including employed, unemployed, underemployed, and discouraged workers. We hired the panel company “Research for Good” to supply the respondents, set quotas for age (all above 16 years old), and capture respondents from across the Gen Y (Millennial), Gen X, and Baby Boomer generations. The selected respondents were further screened on their employment status so that we had an equal number of employed, unemployed, underemployed, and discouraged people (125 of each). The study launched in late-September 2012 and finished collecting responses by mid-October 2012.

We transformed the responses in Question 1 (“How well does this describe your outlook today”) to binary scales and deconstructed them using OLS so that we could deal with membership in a group (i.e., Describes Me or Does Not Describe Me). OLS revealed the

contribution of each element to the rating of “Describes Me” and the respondents were then segmented into groups based upon the similarities of the 36 regression coefficients across pairs of respondents. This segmentation revealed the different overarching mental models held by the respondents.

The additive constant of the OLS regression estimated the average rating that each group (i.e., total sample or a particular segment) would assign to a hypothetical profile having no elements. The individual coefficients (or impact values), one for each element, showed the conditional probability that, when presented in a vignette, the particular element will increase the likelihood that the respondent will say that the vignette “Describes Me (the respondent)”. For example, an element with an impact value of +7 indicates that, when it is present, there is a 7% greater likelihood that a respondent will say that the vignette describes the respondent (i.e., that the respondent will rate the vignette 7-9 on the 9-point “Describes Me” scale, the first rating scale).

We then averaged the additive constant and the impact values, estimated at the individual respondent level, by cross-tabulations for a specified group of individuals in the test population (e.g., for individuals in the test population who answered the self-profiling classification – the second part of the interview – in a certain way). Furthermore, we also averaged the additive constant and impact values for all respondents within a particular mental model segment. Figure 2 below illustrates our overall methodology.

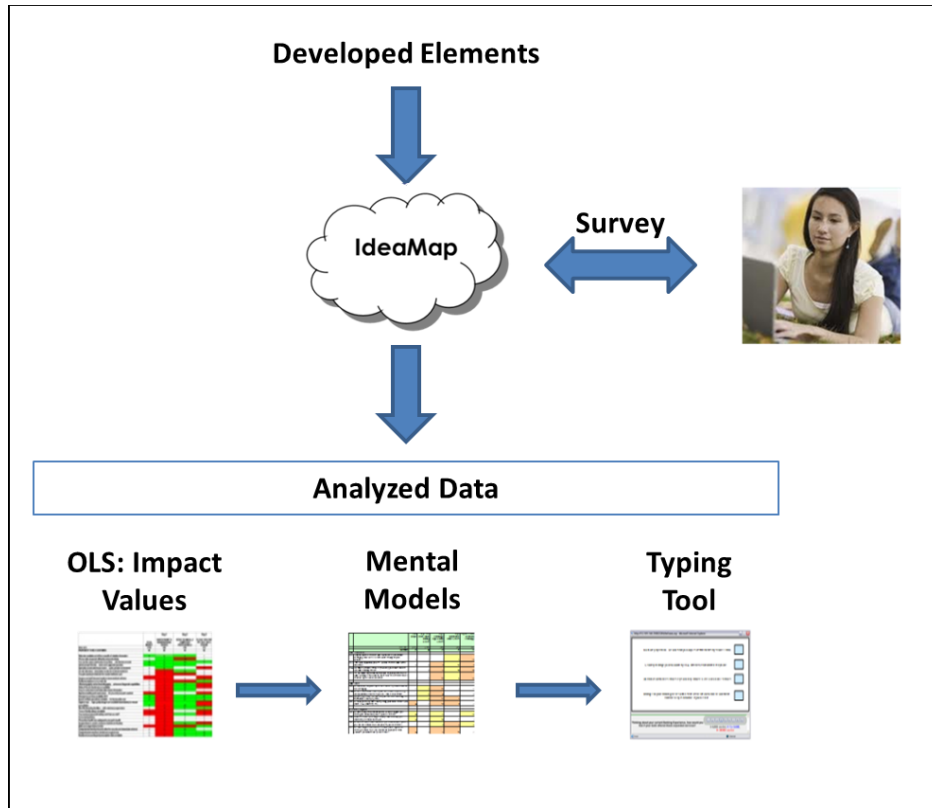


Figure 2. Illustration of methodology

3. RESULTS

For the overall sample, the average impact values are all moderate; no elements stand out in importance. The results – impact values and emotions – are shown in Table 2 and Table 3 respectively. The elements reflected what we expect as general attitudes that any jobseeker would have about unemployment and underemployment. Specifically, people in general are worried about their futures, rely on family and friends to keep them going, look for jobs that they are qualified for, and recognize the importance of social networks. The overall sample feels anxious but also hopeful and calm. This is as expected because people without job security are likely to be overwhelmingly anxious while those with jobs feel much more at ease.

Separating by employment status, we see some striking differences among the unemployed, discouraged, employed, and underemployed segments of the overall sample. Unemployed respondents, as predicted, worry a lot about their future, rely on their friends and family, and feel isolated. They feel anxious but are also calm since they are actively looking for jobs. Discouraged respondents share similar beliefs but they also feel like they are on their own in the job market. And, as expected, they are extremely anxious about their situation. Underemployed respondents are also anxious on average, but they are well balanced with feelings of calmness, perhaps because they at least have some jobs. They believe they are capable of not only getting a job but also getting out of underemployment. In contrast, employed respondents on average are much more calm and hopeful, which is attributable to the fact that they have jobs. As we would expect, they believe they have the skills that employers want and that the job market is not based on chance.

However, even though the results of the segments are what we predict from unemployed, underemployed, discouraged, and employed jobseekers respectively, the results indicate that the segments are not entirely homogeneous because there are only a few strong elements. We expect other elements, like “I should not be in this position” for instance, to be strong among unemployed and underemployed jobseekers but that is not the case.

Because employment status is not the best segmentation measure, we clustered all of the respondents, regardless of their employment status, using their individual impact values and emotions. In doing so, we uncovered three more homogeneous segments, three different mental models. The segments were selected based on statistical significance and we labeled them as: (1) “I’m out of date”, (2) “I still got it”, and (3) “I need to adapt”. We selected the foregoing three-

segment solution for parsimonious (i.e., three segments are simpler to work with) and interpretability (each segment tells a compelling and believable story) reasons.

		Total Sample	Unemployed	Discouraged	Employed	Underemployed
	Base Size	507	171	79	257	125
Element	Constant	39.8	44.8	39.5	36.6	42.5
A1	The job market is like a casino	-2.7	1	-3.4	-4.9	0.7
A2	Jobs are out there for me	3.1	3.5	-1.8	4.4	5
A3	Job requirements are so specific ... matching them is tough	0.8	0.5	2.1	0.6	1.1
A4	Jobs come and go so fast ... I'll always be hunting	-2.9	-2.7	-2.6	-3.2	2.7
A5	Companies aren't offering careers anymore	-1	-3.2	0.7	-0.1	5.5
A6	Many jobs are found through social networks	-2.5	-3.6	-5.8	-0.7	0.5
B1	Employers need workers ... but are slow to hire	3.3	4.5	5.2	1.8	1.5
B2	Companies prefer consultants and part-timers	1.3	0.8	0.1	2	1.6
B3	Jobs don't offer the pay or benefits they should anymore	2.2	1.9	2.3	2.4	4.3
B4	Companies view employees as costs ... not assets	-0.5	-0.5	-2.1	-0.1	-1.4
B5	Employers want loyalty ... but don't give it	0.8	3.5	-0.7	-0.6	1.8
B6	Employers want to interact on social media before hiring	-4.3	-6.2	-4.8	-2.8	-5.2
C1	I worry about my future	6	10.1	4.5	3.7	6.3
C2	I will do everything to get through this	4.2	4.1	3.5	4.5	9
C3	I'm more capable than my resume shows	4.3	5.9	1.9	3.9	0.9
C4	My job defines me	-2.2	-1	-4.6	-2.2	-0.9
C5	I should not be in this position	0.2	4.6	-2.2	-2	4.3
C6	My social network ... many valuable contacts and opportunities	-5.4	-6.4	-10.8	-3	1.2
D1	Family and friends keep me going	5.4	9.7	7.7	1.8	4.5
D2	I feel more and more isolated	3.7	7.5	13.2	-1.7	4
D3	Unemployment insurance ... absolutely necessary	1.1	4.7	10.1	-4.2	0.6
D4	Every expense or purchase ... carefully considered	2.3	3.9	5.3	0.3	-0.9
D5	Employment services ... treat me like a number	1.3	6	3.1	-2.4	4.5
D6	My social network friends support me	0	4.2	1	-3.2	-2.2
E1	My skills need updating	1.5	3.2	-0.4	1	-1
E2	I have the skills employers want	2.5	-3.1	2	6.3	1.9
E3	I need to be retrained for today's jobs	-2.7	0.1	-5	-3.9	-5.3
E4	It's time for a new career	0.8	-1.3	2.6	1.6	-4
E5	I don't have enough experience	-1.2	0.6	2.5	-3.5	1.9
E6	I need to up my skills with social networks	1.2	-0.4	-5.8	4.4	1.3
F1	I'm looking for a job like the one I had	-1.8	-4.2	0.4	-0.9	3.1
F2	I look for any job I might be qualified for	5.4	2.9	4.7	7.2	8.2
F3	It's hard to stand out	3	1.2	12.8	1.1	5.5
F4	Finding jobs ... I feel like I'm on my own	0.4	3.3	8.4	-4.1	3.1
F5	Contacts and referrals ... more important than job searching	-0.5	-3	2	0.4	1.1
F6	Employers should find me ... by searching my online profiles	-4.7	-5.6	-5.6	-3.7	-2.3

Table 2. Impact values of the total sample and the employment status segments.

Emotion	Total Sample	Unemployed	Discouraged	Employed	Underemployed
Angry	2.1392	2.8439	2.0644	1.6942	1.8211
Happy	1.5886	1.4417	0.8353	1.9175	2.2136
Anxious	8.0811	7.9283	11.9075	7.0069	7.4175
Hopeful	6.9247	6.9208	5.2269	7.4497	7.3119
Calm	7.8433	7.4425	6.5428	8.5100	7.8131
Base Size	507	171	79	257	125

Table 3. Emotions of the total sample and the employment status segments.

Mental Model Discovery

Segment 1: Mental Model = “I’m out of date”

Segment 1 comprises 138 respondents, a little more than a quarter of the sample. This segment is homogeneous in that many specific elements are important. The respondents in this segment anxiously see the need to update their skills, particularly the skill of social networking. The people in this segment all believe in searching for any job but they prefer to have jobs similar to the jobs they had before they became unemployed. Segment 1 feels anxious but they are predominantly calm and hopeful because they have support from friends and family. While the people in this segment believe they are out of date, they do not try to change; instead, they feel defeated.

		Segment 1 of 3 % Total			
Base Size		138	27%		
Element	Constant	36		Emotion	
E1	My skills need updating	14		Anxious	9
D5	Employment services ... treat me like a number	14		Hopeful	14
D1	Family and friends keep me going	12		Hopeful	14
E6	I need to up my skills with social networks	12		Anxious	11
F2	I look for any job I might be qualified for	10		Hopeful	11
F1	I'm looking for a job like the one I had	10		Calm	12
B5	Employers want loyalty ... but don't give it	-11		Anxious	13
B4	Companies view employees as costs ... not assets	-12		Calm	9
C6	My social network ... many valuable contacts and opportunities	-12		Anxious	10
C4	My job defines me	-13		Calm	11
B6	Employers want to interact on social media before hiring	-15		Calm	11

Table 4. Impact values of the strongest elements and emotions of Segment 1

Segment 2: Mental Model = “I still got it”

Segment 2 comprises 249 respondents, which was roughly half of the total sample. The people in this segment are highly confident of their skills in the job market and, consequently, fail to see the need to change. These respondents do feel anxious and are worried about the future but they believe that they are capable and will get through this.

		Segment 2 of 3 % Total			
Base Size		249	49%		
Element	Constant	47		Emotion	
C1	I worry about my future	11		Anxious	10
C3	I'm more capable than my resume shows	11		Hopeful	10
C2	I will do everything to get through this	8		Hopeful	14
F2	I look for any job I might be qualified for	8		Hopeful	10
A6	Many jobs are found through social networks	-6		Calm	10
A1	The job market is like a casino	-6		Calm	10
D6	My social network friends support me	-6		Calm	10
D5	Employment services ... treat me like a number	-7		Anxious	9
A4	Jobs come and go so fast ... I'll always be hunting	-7		Anxious	9
A5	Companies aren't offering careers anymore	-7		Anxious	9
E5	I don't have enough experience	-7		Anxious	13
E6	I need to up my skills with social networks	-7		Anxious	13
E2	I have the skills employers want	-8		Anxious	11
E1	My skills need updating	-8		Anxious	11
E4	It's time for a new career	-9		Calm	8
E3	I need to be retrained for today's jobs	-11		Anxious	11

Table 5. Impact values of the strongest elements and emotions of Segment 2

Segment 3: Mental Model = “I need to adapt”

Segment 3 comprises the remaining 120 respondents, roughly a quarter the sample, making it about the same size as Segment 1. The people in this segment are the ideal jobseekers. They are confident of their own abilities, have strong social support, and are critical of employer hiring practices. But at the same time, these respondents recognize that the job market is changing and are willing to adjust to their changing environment. Unlike the other two segments, this segment is the most calm and the least anxious because they are aware of the need to adapt.

Segment 3 of 3		Segment 3 of 3	% Total		
Base Size		120	24%		
Element	Constant	29		Emotion	
E2	I have the skills employers want	15		Hopeful	10
E4	It's time for a new career	14		Anxious	11
D1	Family and friends keep me going	13		Calm	7
B1	Employers need workers ... but are slow to hire	13		Hopeful	11
B3	Jobs don't offer the pay or benefits they should anymore	13		Anxious	11
B5	Employers want loyalty ... but don't give it	12		Hopeful	10
E5	I don't have enough experience	11		Calm	13
D6	My social network friends support me	10		Calm	11
C5	I should not be in this position	-6		Calm	10
F5	Contacts and referrals ... more important than job searching	-7		Calm	9
F3	It's hard to stand out	-8		Calm	12
F1	I'm looking for a job like the one I had	-10		Hopeful	12
F6	Employers should find me ... by searching my online profiles	-15		Calm	14

Table 6. Impact values of the strongest elements and emotions of Segment 3

Predicting a Person’s Mental Model Segment

We see that segmenting by mental models results in better and more homogeneous segments than segmenting by employment status. Therefore, given the unique and different beliefs of these three segments, we can better help a jobseeker who is seeking assistance if we are able to identify what mental model segment he/she is in. Once we identify the jobseeker’s segment, we can then tailor services accordingly his/her needs.

We conducted demographic cross-tabulations of our three segments to create contingency tables that show how the three mental model segments are distributed across the population (i.e., what demographic categories the members of each segment fall under). Tables 7 and 8 show the cross-tabulations of the mental model segments on employment status and age and gender respectively. The contingency tables suggest that the mental models are not related to one's employment status or with easily measureable demographic (e.g., household income, ethnicity, age, etc.); a person's demographic information is not sufficient for determining his/her mental model. Instead, our three emergent mental models towards unemployment are contained within the mind of the respondent at a personal level.

	Total Sample	Unemployed, looking for work	Discouraged - Unemployed, not looking for work now but want a job	Employed	Underemployed- Working part time but want to be working full time
BASE SIZE:	507	171	79	257	125
	%	%	%	%	%
Seg 1 of 3 (Out of Date)	27	27	27	28	24
Seg 2 of 3 (Still Got It)	49	47	51	50	53
Seg 3 of 3 (Adaptable)	24	26	23	23	23

Table 7. Cross-tab by employment status

	Total Sample	Seg 1 of 3- Out of Date	Seg 2 of 3- Still got it	Seg 3 of 3- Adaptable
BASE SIZE:	507	138	249	120
	%	%	%	%
Which of these groups				
16-17	7	4	9	5
18-24	27	30	24	29
25-34	27	30	26	28
35-44	18	17	18	19
45-54	14	14	15	13
55-64	5	5	6	5
65 and over	1	0	2	0
With which gender do				
Female	54	57	56	48
Male	46	43	44	52

Table 8. Cross-tab by age and gender

Thus, rather than predicting one’s mental model segment membership using a person’s demographics, we developed a short “diagnostic test” called the intervention. By giving a person this intervention and analyzing his/her performance on it, we can assign the person to a segment (i.e., enter the person’s mental model towards under/unemployment).

The intervention is a four-question typing tool, created by discriminant function analysis (DFA). It uses the performance of the elements recorded to an easy-to-use three point scale. DFA selected elements which, in concert and through a set of empirical weights, end up correctly assigning the respondents into the proper segment (and likewise, the appropriate mental model). Figure 3 shows the typing tool that we developed. For individuals beyond the scope of our survey, we can determine their mental models towards unemployment by giving them this tool, and then provide the proper counseling or remedial actions.

How well do these statements describe your outlook today?

Options	Not at all	Maybe	Definitely
It's time for a new career	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
I look for any job I might be qualified for	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
My job defines me	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
The job market is like a casino	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 3. Typing Tool

4. DISCUSSION

Summary

The findings from this jobseekers study revealed that people have different mental models towards the micro-world unemployment. Going into the study, we had expected Segment 3 to be the largest segment purely because it seems reasonable that people should know that both the job market and the skills required have changed from prior years. However, the actual membership in this “I need to adapt” mental model segment is much smaller than we anticipated.

The relatively low membership in Segment 3 is concerning. First, the data suggested that most respondents do not have the proper mental models to recognize the value of services that jobseekers are advised to use (e.g., resume development, career workshops). Furthermore, many of the current unemployment services appear to cater only to people in Segment 3. For example, the New York State’s Department of Labor offers online job search tools that find current job openings in one’s region and provides an On-the-Job Training program (OJT) to teach jobseekers relevant job market skills. However, these services would appeal only to the Segment 3 jobseekers who are willing to develop new skills to meet the current job requirements. By offering these same services to every site visitor, the Department of Labor is not effectively

assisting the Segment 1 and Segment 2 jobseekers who are less willing to adjust to the changing job market³.

The unfortunate conclusion to these results is that roughly three-fourths of the respondents sampled failed to recognize the changes they may need to make in the current job market because their mental models prevented them from recognizing them. Challenging and changing the mental models held by people and the private and public sectors may be necessary to improve the chances for people to gain, retain, or change employment.

Caveats

This paper presents an initial foray into the discovery of mental models; as such, this can be followed with additional studies. There are a number of caveats, the main one being the nature of the respondent sample. First, the test venue was an Internet sample which, although widely used in research, has limitations. The internet as a tool for consumer research is becoming increasingly popular, but there is no corpus of knowledge about mental models against which to check the “correctness” of the internet-based data. Second, the discovery of the three mental models for unemployment is innovative, with these mental models emerging from the collected data rather than from previous theory. We cannot confirm our identified mental models because there is no underlying theory for what the mental models of unemployment should be.

Third, by its very nature, RDE works with a concrete, specific, limited set of categories and elements; it is impossible to exhaust the different ways of expressing ideas. As a result, we cannot measure how comprehensive or how representative our chosen elements were of

³ Department of Labor, Career Services. <http://www.labor.ny.gov/careerservices/CareerServicesIndex.shtm> (accessed October 15, 2013).

unemployment and underemployment. Moreover, this study is limiting because it only focused on people's unemployment experience.

Ultimately, we hope combine an understanding of the mental models of unemployment with guidelines and recommendations to policymakers regarding an empirical way to discover what steps need to be taken to fix those aspects of the unemployment problem which involve mental models. We can extend this study with future studies that examine the mental models of unemployment held by company executives and public policy makers. To do so, we will have to reconstruct the categories and elements in future studies to be relevant to employers and to the public policy officials.

Implications

The big implication of this study is that people of different employment statuses are not different from one another with respect to their mental models, as may often be assumed. Instead, people – irrespective of employment status – fall into three main mental model segments and these identified mental models should be used to guide policies as well as to develop programs and practices which fit people. The employment services that are currently offered in the United States cannot continue being “one size fits all”. Instead, they ought to be tailored to the mental models of the individual unemployed person. For example, as discussed before, the New York State's Department of Labor currently presents an undifferentiated “laundry-list” of generic services, ranging from resume development to information on the labor market (e.g., wages, jobs in demand and projections), on its webpage that only help those in Segment 3⁴.

⁴ Department of Labor, Division of Employment and Workforce Solutions. <http://www.labor.ny.gov/dews-index.shtm> (accessed on April 13, 2013).

Our study suggests that the Department of Labor should instead offer tailored career services, taking into account the recipient's mental model. It could include a typing tool on its webpage to identify the webpage visitors' mental models. Then, depending on the recipient's predicted mental model segment, he/she could be redirected to a list of customized services. If the person is in Segment 1, he/she would see the Department of Labor's JobZone program, which finds job titles closely related to one's current job, and the Job Search Guide, which provides a comprehensive overview of how to navigate through current job market. If the person is in Segment 2, he/she would see services such as its Skills Matching and Referral Technology (SMART) program, which matches one's skills and resume to a job, and Universe Jobs, which lets one create a profile to showcase your experience to potential employers. Or, if the person is in Segment 3, he/she would just see the full list of services that the Department of Labor currently offers. In summary, mental models can provide guidelines for targeting services and potentially increase the fit between service offerings and each person, with the beneficial prospects that better fit will contribute to more effective services, delivery and outcomes.

5. THE OVERALL PICTURE: NEXT STEPS

This investigation gave us insight on jobseekers and the changes that they, given their mental models on unemployment, would accept. Contrary to what may often be assumed, employed and unemployed people are no different in their mental models. This study showed us that the majority of people's mental models are misaligned with the realities of the current job market, which led us to acknowledge that, given the variety of mindsets discovered among our respondents, the current unemployment services utilized by jobseekers are not necessarily the most fitting for them. An important implication of this research is the need for employment

services, educators, and trainers to tailor their messages and services in ways that resonate with all mental model types, and to test their effectiveness.

This study can be part of a broader investigation to helping policymakers find a solution to the unemployment crisis that will work for all mental models types. As part of the broader investigation, we could conduct three additional studies to investigate the mental models of jobseekers, employers, and policymakers regarding solutions to the unemployment crisis. Those studies will be identical, thereby permitting comparisons among the three groups of people regarding specific solutions. We will identify areas of overlap and disconnects that should be helpful for developing and targeting programs and policies.

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