

West University of Timisoara
Centre for Psychological Studies and Research & Department of Psychology

Euroregional Centre for Applied Psychology

Romanian Journal of Applied Psychology

(Former Revista de Psihologie Aplicată)

Year (Volume) 15, no.2, 2013

ROMANIAN JOURNAL OF APPLIED PSYCHOLOGY

(Former Revista de Psihologie Aplicată)

Founded in 1999
ISSN 1454 – 8062

Founding Editor Zoltán Bogáthy

Editor-in-Chief Florin Alin Sava

Editors:
Alin Gavreliuc
Corina Ilin
Irina Macsinga
Laurențiu Paul Maricuțoiu
Ramona Paloș
Coralia Sulea
Mona Vintilă
Delia Virgă
Adina Dumitru

Advisory Board:
Eva Cifre, University Jaume I, Castellon, Spain
Ticu Constantin, Al.I. Cuza University, Iasi, Romania
Ion Dafinoiu, Al.I. Cuza University, Iasi, Romania
Daniel David, Babes-Bolyai University, Cluj-Napoca, Romania
Ilany Kogan, University of Tel Aviv, Israel
Ricardo Garcia Mira, University of A Coruña, Spain
Alex Milam, University of Houston - Clear Lake, USA
Anca Munteanu, West University of Timisoara, Romania
Marco Perugini, University of Milano Bicocca, Italy
B. Keith Payne, University of North Carolina at Chapel Hill, USA
Martin Voracek, University of Vienna, Austria
Hans de Witte, Catholic University of Leuven, Belgium

The Romanian Journal of Applied Psychology is published biannually (in June and December), in one volume per year by the Euroregional Centre for Applied Psychology (Timisoara, Romania) in cooperation with West University of Timisoara, Department of Psychology. The journal has a blind peer review policy. The Romanian Journal of Applied Psychology is member of the Committee on Publication Ethics (COPE).

The Romanian Journal of Applied Psychology (RJAP) is an Open Access peer-reviewed publication dedicated to the dissemination of research results and theory in all fields of psychology. Through its Open Access policy, the RJAP is committed to disseminate the published papers as widely as possible, so that the article is made freely available online on publication and the author may post a copy of the final typeset PDF on their personal website or institutional repository. There are no processing or acceptance fees that are requested for publishing in RJAP. The journal is devoted to the advancement of applied psychology. It publishes empirical, theoretical, methodological, and practice oriented articles covering topics relevant to various fields of applied psychology. Whereas particular consideration is given to empirical articles using quantitative methodology, the journal will publish the full range of articles including but not limited to empirical qualitative studies, short research reports, meta-analyses, methodological papers or literature reviews.

The manuscripts should be written in English or in Romanian, according to the American Psychological Association (APA) last edition standards. All charts and figures should be attached separately in a .tiff or in a .gif format. All manuscripts should have an English abstract of maximum 150 words, as well as 5 to 7 keywords in English. There are no limitations regarding the length of the manuscript, however the authors are encouraged to submit manuscripts with less than 10,000 words. Additional details regarding past contributions (summary and abstracts) are available at the following link: <http://www.rjap.psihologietm.ro>.

Journal indexing: DOAJ, EBSCO Host, Index Copernicus, Academic Journal Database, GESIS,

Please send one copy of your manuscript via e-mail to: submission@rjap.psihologietm.ro.

The submission deadlines: November, 15th (for winter issues), and May, 15th (for summer issues)

Cover: Lucian David

Table of contents

Workplace incivility and target's characteristics: insights from a cross-national study Alex Milam, Coralia Sulea	33
The online Prescriptive Index platform for the assessment of managerial competencies and coaching needs: development and initial validation of the experience sampling Mood Wheel and the Manager-Rational and Irrational Beliefs Scale Oana A. David	41
Locus of control, problem-solving skills appraisal as predictors of waste prevention behaviors Samaneh Karbalaee, Abbas Abdollahi, Mansor Abu Talib, Siti Nor Yaacob, Zanariah Ismail	51
Smoke reduction and cessation with psychological interventions: A randomized clinical trial Laura Arhiri, Daniela Muntele Hendreş, Mihaela-Alexandra Gherman	59
Job search self-efficacy as mediator between employment status and symptoms of anxiety Andrei Rusu, Diana-Carmen Chiriac, Nastasia Sălăgean, Ana-Maria Hojbotă	69

Workplace incivility and target's characteristics: insights from a cross-national study

Alex Milam^a, Coralia Sulea^b

^aUniversity of Houston – Clear Lake, USA; ^bWest University of Timișoara, Romania

Received 24 September 2013; Accepted 20 October 2013
Available online 6 December 2013

Previous research has found that there are certain personality characteristics that predict whether one is likely to become a target of workplace mistreatment, and that these characteristics provoke such behavior (Milam, Spitzmüller, & Penney, 2009). The present paper aims to replicate and expand Milam et al.'s paper by looking at workplace incivility in two parts of the world, the United States and Romania, and two types of sources (self and coworker) to see if this phenomenon is uniquely American, or if it is present in another, very different culture. Our findings indicate that in both countries, low levels of agreeableness and high levels of neuroticism are associated with individuals' reports of receiving higher levels of workplace incivility than their counterparts, and that from the coworkers' perspectives, this incivility is provoked by the targets of the mistreatment.

Keywords: workplace incivility, agreeableness, neuroticism, self- and coworker reports

Address of correspondence: Correspondence regarding this manuscript should be addressed to Alex Milam, Ph.D. University of Houston-Clear Lake 2700 Bay Area Blvd. Campus Box 244 Houston, TX 77058. Email: MilamA@UHCL.edu. Office: Bayou 1508. Phone: 281-283-3332.

Acknowledgements: This work was supported by a grant of the Romanian National Authority for Scientific Research, CNCS-UEFISCDI, project number PN-II-RU-PD-2011-3-0162.

Workplace incivility, which typically manifests itself in the form of disrespect, condescension, and degradation (Andersson & Pearson, 1999; Burnfield, Clark, Devendorf, & Jex, 2004; Robinson & Bennett, 1995), is both prevalent and detrimental for organizations and individuals alike (Cortina, Magley, Williams, & Langout, 2001). Workplace incivility contributes to poor job attitudes, malaise and job-related strain (Notelaers, Einarsen, De Witte, & Vermunt, 2006), reduced task (Porath & Erez, 2007) and contextual performance (Taylor & Kluemper, 2011), an increase in counterproductive work behaviors (Penney & Spector, 2005). The present paper aims to replicate and expand the work of Milam et al. (2009), which demonstrated that (in the United States) the experience of workplace incivility is influenced by the personality of the targeted person.

Our specific aim is threefold: First, we will consider the experiential phenomenon of workplace incivility, with an emphasis on personal antecedents as a culturally common experience, by examining workplace incivility in both the United States and Romania, a country which is relatively underrepresented in the literature on workplace mistreatment. Second, we wish to focus on both self- and coworker reports of those personal aspects in order to get a

more ample perspective on what role personal features play in incivility experiences.

Workplace incivility is considered to be "low-intensity deviant behavior with ambiguous intent to harm the target, in violation of workplace norms for mutual respect" (Andersson & Pearson, 1999, p.457). Workplace incivility typically results in behavior that is disrespectful, condescending, and degrading (Burnfield et al., 2004) and has been found to be both prevalent and detrimental. Cortina et al. (2001) found that 71% of U.S. respondents reported themselves to be targets of some form of workplace incivility during the previous five years. Recent research (Porath, MacInnis, & Folkes, 2010) indicates that even customers simply observing workplace incivility will react in retaliatory ways that will hurt the organizations. Taken at its face value, workplace incivility can be seen as relatively innocent, particularly compared to other counterproductive work behaviors (CWBs) such as bullying or mobbing (Neuman & Baron, 2005). However, the reciprocal nature of workplace incivility (Pearson, Andersson, & Porath, 2005), its effect on an organization's bottom line (Pearson, Andersson, & Porath, 2000), and its role as an antecedent to job strain (Cortina et al., 2001) make it a particularly important construct to empirically investigate.

We are also interested in geographically expanding the Milam et al. (2009) study. Typically, research regarding workplace incivility has been focused on the Western world, which tends to be highly individualistic, has low power distance, and typically presents high tolerance of others' opinions (Hofstede, 2012). With few exceptions (i.e., Duffy, Ganster, & Pagon, 2002; Leung, Wu, Chen, & Young, 2011), what we know about the experience, antecedents, and outcomes of workplace incivility is confined to cultures that are relatively similar. We aim to study workplace incivility in two very different corners of the world, the United States and Romania. Romania, largely cut off from the social science world for half a century, is an Eastern European country which is considered by some studies to be extremely collectivist (e.g., Hofstede, 2001; House, Hanges, Jarvidian, Dorfman, & Gupta, 2004; Spector et al. 2001). Although there is some disagreement in the literature as to the extent of how collectivist present-day Romania is, compared to the rest of Europe (see Green, Deschamps, & Paez, 2005; Shulruf et al., 2011), the literature is clear that Romania is more collectivist than the U.S., which is the nature of the comparison in the present study.

We believe that by comparing the predictors of workplace incivility of these culturally dissimilar countries, we will better suited as a field to understand the extent to which personality plays either a culturally-common or culturally-specific role in such interpersonal transgressions. Specifically, we are interested in whether personality traits which may predict target-experienced workplace incivility in the U.S. will also have the potential to predict incivility in an area that is culturally dissimilar to populations that are typically represented in the work psychology literature. With the present study, we replicate and expand Milam et al.'s study (2009) by looking at another culture, Romania, and by examining another U. S. sample, in order to see if the phenomenon in question is generalizable to any other parts of the world. Meta-analytical research on workplace victimization (which is how targets of more intense forms of mistreatment are referred) has lamented the lack of research examining the role of personality characteristics in victimization (Bowling & Beehr, 2006). It is our objective to gain insights into the role that personality traits play in becoming a target of workplace incivility. Through this objective we hope to contribute to an understanding of the behavioral or perceptual expression of traits that may need to be altered if the experience of workplace incivility and its negative consequences for psychological well-being and health are to be avoided. Therefore, in order to gain a more accurate insight about the role of personality, we aim to replicate the approach of Milam et al.'s study (2009) by obtaining both self- and other- reports of personality traits, considering that reports from others provide unique information that is not grasped by only self-report (Hogan, Hogan, & Roberts, 1996; Lee, Ashton, Morrison, & Dunlop, 2008). Further, to guard against common-method variance, we will also obtain coworker reports of workplace mistreatment, so that we are able to capture both perceived and reputational perspectives on the target-focused mistreatment.

A review of the literature has established that the five-factor model of personality is a universally valid taxonomy of traits (Hofstede & McCrae, 2004), and that these factors are fundamental dimensions of personality that are

independent of culture (Kallasmaa, Allik, Realo, & McCrae, 2000; McCrae, 2000). The structure of personality has been established to be nearly identical in African, Asian, European, North American and South American cultures (De Fruyt et al., 2009), and even appears to enjoy a phenotypic, genetic status (Yamagata et al., 2006).

Although there has been a fair amount of research conducted regarding culture and personality, there is a relatively small amount of such research in the field of organizational/work psychology. However, one such study (Narayanan, Menon, & Levine, 1995) concluded that the cross-cultural robustness of the Big Five continues to accrue; thus we can determine whether personality dimensions are differentially related to such criteria as school or job performance across cultures. More evidence is needed to indicate that there are consequences and outcomes of personality in the workplace that are identical across cultures. We believe that there are traits and associated behaviors that are negatively received by one's coworkers. However, there are likely other personality-driven behaviors that are offensive in some cultures, and not others. We aim to pursue this idea with the present research.

Individuals who possess high levels of agreeableness tend to exhibit behaviors, such as cooperation, trust, and generosity, which are well-received by others (McCrae & Costa, 1987). Conversely, those who are low in the trait tend to act in ways that are considered by coworkers to be surly, stubborn, and disrespectful. This, according to Milam et al. (2009), tends to provoke, or unwittingly invite uncivil behavior from one's coworkers. Furthermore, low levels of agreeableness may relate to higher levels of both experienced and perceived workplace incivility. McCrae and Costa (1991) found that individuals who are high in agreeableness experience more positive affect and generally have higher levels of well-being. Individuals who are low in agreeableness are said to be mistrustful and skeptical (McCrae & Costa, 1987), thus, they may be more likely to see uncivil treatment, even when it is not present. McCrae and Costa (2003) also describe persons with low levels of agreeableness as being skeptical and having a tendency to behave in a condescending manner, to express hostility directly and to push limits, with respect to confrontation. In addition, Sava (2009) found that individuals with low levels of agreeableness were among those who presented higher levels of maladaptive schemas related to feeling disconnected and rejected, and having impaired boundaries. Such schemas have the potential to explain potential "invitations" of incivility among those who are low in agreeableness. Therefore, not only are individuals who are low in agreeableness likely to alienate their coworkers, which in turn invites actual incivility, but they are likely to process even neutral events as being uncivil. Milam et al. (2009) found this to be the case in the U.S., thus we should test the hypothesis that the same applies to Romania because although countries differ on their relative scores on Big Five traits such as agreeableness, there does not appear to be a case to be made that low agreeableness would be interpersonally adaptive; that is, there does not seem to be any evidence to suggest that there is a culture where coworkers would prefer the behavior that coincides with individuals who are low in agreeableness.

With respect to inviting uncivil behavior, we turn to the childhood bullying work of Bernstein and Watson (1997), which identifies a class of bullying victims who tend to be aggressive, invite bullying unto themselves, and are even viewed by others as bullies as “provocative” victims. We propose that similarly, some targets of workplace incivility (completely unwillingly and unwittingly) may invite mistreatment unto themselves through their behavior, which is a manifestation of their personality. To be clear, this is not akin to the present research as “blaming the victim”, but rather an attempt to get a complete picture of all variance that may be involved in the mistreatment of individuals in the workplace. It may be that individuals who tend to engage in workplace incivility actively seek out those whom they perceive as “deserving” the mistreatment. This in no way excuses the incivility, but does shed light on a possible antecedent of the incivility. In the case of agreeableness, we propose that individuals who have low levels of agreeableness will open themselves up to being treated uncivilly, by the behavior with which low levels of agreeableness is associated.

Hypothesis 1: There is a general negative relation between agreeableness and workplace incivility. That is, regardless of one’s culture, individuals who are low in (both self-reported and coworker-reported) agreeableness will report higher levels of (self-reported and coworker-reported) workplace incivility.

Hypothesis 1a: This relation is mediated by provocative status.

Neuroticism may also predict individuals’ experiences and perceptions of workplace incivility. Neuroticism, which is marked by worrying, insecurity, and being temperamental (McCrae & Costa, 1987) has been linked strongly to negative affectivity, which is a trait-based tendency to experience guilt, fear and anxiety (Watson, Clark, & Tellegen, 1988), leading to pessimism (Steed, 2002), reduced organizational citizenship behaviors, withdrawal behaviors, and counterproductive work behaviors (Kaplan, Bradley, Luchman, & Haynes, 2009).

As negative affectivity (NA) often affects one’s mood (Clark & Watson, 1988), Affective Events Theory (AET; Weiss & Cropanzano, 1996) would predict that NA and neuroticism influence how an individual interprets interpersonal events such as rude treatment at work. According to AET, individuals who are high in NA have more intense reactions to negative events in the workplace than do individuals who are low in NA. Additionally, McCrae and Costa (1991) assert that those who are high in neuroticism experience more routine negative events, or hassles and fewer routine positive events, or uplifts. Similar to agreeableness, neuroticism manifests itself publicly in the form of behavior that is likely to provoke uncivil treatment, such as verbally worrying and conveying insecurity, acting fidgety, and generally making one’s problems known to others (Milam et al., 2009). This type of workplace behavior is not likely to be valued in any culture, as it tends to be distracting and counterproductive to a productive working environment. Taken together, we believe that regardless of culture, neuroticism will increase the likelihood of one becoming a target of uncivil workplace behavior.

Hypothesis 2: There is a general positive relation between neuroticism and workplace incivility in the U.S. and Romania. Regardless of one’s culture, individuals who are high in (both self-reported and coworker-reported) neuroticism will report higher levels of (self-reported and coworker-reported) workplace incivility.

Hypothesis 2a: This relation is mediated by provocative status.

We wish to utilize the same strategy as Milam et al. (2009) and obtain personality and incivility perspectives not only from employees, but from their coworkers as well. There is much to be gained by investigating both of these perspectives. First, there is the notion that in interpersonally-oriented studies such as the present study, personality can be operationalized as public, visible, and reputational, which can best be seen by one’s coworkers, or private, and more cognitive in nature, which is less visible, and best measured by self-report (Hogan, Hogan, & Roberts, 1996; McCrae & Costa, 1991). Additionally, by obtaining incivility reports from coworkers, we can move away from simply actor-related perception of mistreatment and get an observer’s perception of whether indeed the respective actors are targets of mistreatment.

Method

Participants

There were two samples used in the present study. Sample 1 was a U.S. sample and Sample 2 was a Romanian sample. The main participants in both samples were instructed to complete the survey and to give a second survey packet to one of their coworkers. The coworker sent the completed packet back to the respective researcher in that country.

Sample 1. Sample 1 consisted of 323 working undergraduates from a large U.S. university. The participants were employed in a variety of occupations and industries, such as education, finance, and healthcare. The sample was 75% female, and the age of participants ranged from 18 to 53, with a mean and median age of 24. Participants had worked for their respective organizations for an average of just over two years.

Sample 2. Sample 2 consisted of 141 working undergraduates from a large Romanian university. The participants were employed in a variety of similar occupations to those in Sample 1. The Romanian sample was 68% female, and the age of participants ranged from 20 to 58, with a mean and median age of 28. Participants had worked for their respective organizations for an average of three years. All measures administered in the Romanian sample were translated from English into Romanian by a professional translator, and then back-translated into English by a different translator. Any items that did not make conceptual sense after this process were discussed by the coauthors and modified to reflect the respective construct’s intent.

Measures

Workplace incivility. We obtained self and coworker reports of the seven-item Workplace Incivility Scale (WIS; Cortina et al., 2001), which is a general measure of workplace incivility ($\alpha = .93$ and $.88$ for self-reports in the U.S. and Romania, respectively; $.94$ and $.85$ for coworker

reports). This measure of workplace incivility is very common in the literature, and has been used in a variety of settings (Kern & Grandey, 2009; Reio & Sanders-Reio, 2011; Smith, Andrusyszyn, & Laschinger, 2010). Sample items include, "In the past year, have you been in a situation where your peers or coworkers put you down or were condescending to you?"

Individual differences. For agreeableness and neuroticism, we employed the 10-item Big Five personality measures available in the International Personality Item Pool (IPIP; Goldberg, 1999). Items ask participants to rate their level of agreement for a series of statements beginning with the word "I...". We also collected data from each of the main participant's coworkers, with the main participant as the referent. Sample items for agreeableness include, "...make people feel at ease", and "...have a good word for everyone" ($\alpha = .79$ and $.78$ for the U.S. and Romanian self-reports, respectively, and $.89$ and $.88$ for coworker reports). Sample items for neuroticism include, "...have frequent mood swings", and "...panic easily" ($\alpha = .82$ and $.80$ for self-reports, $.80$ and $.75$ for coworker reports). The alpha for the Romanian coworker report of neuroticism was initially $.46$, so Item #7 ("My coworker seldom feels sad") was removed from the scale. In order to maintain consistency across coworker-reports, as well as consistency across countries, we also deleted the item for analysis of the U.S. sample as well ("My coworker seldom feels blue" in the English version of the scale), which initially had an alpha of $.79$ for the coworker measure of neuroticism.

Provocative status. Finally, we used coworker reports of the three-item provocative victim scale that was employed in the Milam et al. (2009) study. This survey measures the extent to which one's coworkers perceive study participants to be seen as provocative victims ($\alpha = .79$ and $.78$ for the U.S. and Romanian samples, respectively). The items in this scale were: "His or her coworkers argue with him/her frequently", "He or she has a tendency to provoke ("piss off") other people at work," and, "When people at work are rude to him/her, it is usually because he or she deserves it". Because this variable calls for an observer's perspective, we only collected coworker reports of provocative status.

Results

We used hierarchical multiple regression to analyze our hypotheses, with gender included as a control variable in every step of the respective regression equations. This is due to the Goodwin and Gotlib (2004) notion that gender may affect both individual differences and the experience of workplace incivility. We also collected data on job tenure, age, level of education, and industry in which the participants were employed. None of these variables was significantly correlated with any dependent or independent variables, so we did not include them as covariates in the ensuing analyses.

Table 1. Intercorrelations between Variables in U. S. Sample.

Variable	M	SD	1	2	3	4	5	6	7	8	9
1. Age	24.09	0.5	-								
2. Gender	-	-	0.11								
3. Agreeableness	3.85	0.54	0	-0.08							
4. Neuroticism	2.3	0.65	-.12*	-.13*	-.43*						
5. Workplace incivility	2.34	1.08	0.11	.14*	-.18**	.16**					
6. Provocative status	1.72	0.84	0.11	.19**	-.19**	-0.02	.18*				
7. Coworker report of agreeableness	3.98	0.67	-0.11	-.18**	.26**	-0.02	-.17*	-.56**			
8. Coworker report of neuroticism	2.18	0.64	0.04	-0.02	-.21**	.23**	.26**	.40**	-.59**		
9. Coworker report of incivility	2.06	0.92	0.07	.19**	-0.13	0.05	.33**	.46**	-.45**	.33**	-

Note. * $p < .05$; ** $p < .01$

Table 2. Intercorrelations between Variables in Romanian Sample.

Variable	M	SD	1	2	3	4	5	6	7	8	9
1. Age	7.93	9.17	-								
2. Gender	-	-	-0.04								
3. Agreeableness	3.83	0.55	0.11	.24**							
4. Neuroticism	2.46	0.62	0.03	-0.07	-.36**						
5. Workplace incivility	2.27	0.8	0.04	0.08	-.28**	.23**					
6. Provocative status	1.93	0.84	0	-0.1	-.23**	0.13	0.03				
7. Coworker report of agreeableness	3.85	0.61	-0.01	-0.03	.41**	-0.15	-0.03	-.59**			
8. Coworker report of neuroticism	2.49	0.71	0	-0.11	-0.11	.23**	-0.12	.28**	.42**		
9. Coworker report of incivility	2.27	0.72	-.17*	0	-.20*	0.07	.31**	.38**	-.40**	.25**	-

Note. * $p < .05$; ** $p < .01$

Hypothesis 1, which proposed that there would be a negative relation between agreeableness and workplace incivility in both the U.S. and Romania, was generally supported. Specifically, in the U.S., when we look at workplace incivility ($\beta = -.17$, $p < .01$), we found that low levels of self-reported agreeableness were associated with self-reported workplace incivility. This effect was much stronger when analyzing the relationship between coworker-reports of agreeableness and incivility directed

toward the main participant ($\beta = -.43$, $p < .01$). We also found a significant relation in coworker reports of agreeableness predicting self-reports of workplace incivility ($\beta = -.15$, $p < .05$).

In Romania, we found even larger effect sizes for the relationship between self-reported agreeableness and self-reported incivility ($\beta = -.28$, $p < .01$). As in the U.S. sample, we also found that coworker reports of agreeableness were negatively associated with coworker reports of incivility

($\beta = -.40$, $p < .01$). However, we found non-significant results for the relationship between coworker-related agreeableness and self-reported workplace incivility ($\beta = -.03$, $n.s.$), which prevents Hypothesis 1 from being completely supported.

Hypothesis 1a, which posited that provocative status would mediate the relation between workplace incivility and agreeableness found in H_1 , was also partially supported. As Milam et al. (2009) found this effect was found only when looking at coworker reports of agreeableness predicting coworker reports of workplace incivility. Specifically, controlling for gender, the bootstrap (Bollen & Stine, 1990; Shrout & Bolger, 2002) estimated indirect effect is $-.22$, with a standard error of 0.79 (Preacher & Hayes, 2008). The 95% bias-corrected

bootstrap confidence interval (5,000 trials) is from $-.447$ to $-.023$, and because zero is not in the confidence interval, it is concluded that the indirect effect is different from zero. The percentage of the total effect that is mediated is 42.31% . For the Romanian sample, we also found that the hypothesis was supported only when investigating the relationship between coworker reports of agreeableness and coworker reports of incivility. Using bootstrapping, and controlling for gender, the estimated indirect effect is $-.19$, with a standard error of 0.78 . The 95% bias-corrected bootstrap confidence interval (5,000 trials) is from $-.334$ to $-.028$, and because zero is not in the confidence interval, we can conclude that the indirect effect is different from zero. The percentage of the total effect that is mediated is 33.80% .

Table 3. Summary of Hierarchical Regression Analysis for Agreeableness Predicting Perceptions of Workplace Incivility

		USA sample (N = 323)				Romanian sample (N = 141)			
		Step1	SE	Step2	SE	Step1	SE	Step 2	SE
<i>Self-report of workplace incivility:</i>									
	Gender	.35*	0.15	.32*	0.15	0.12	0.15	0.01	0.14
	Self-report of agreeableness			-.34**	0.12			-.40**	0.12
	R^2	0.02		.05**		0.01		.08**	
	Gender	0.32	0.17	0.25	0.17	0.13	0.15	0.12	0.15
	Coworker report of agreeableness			-.24*	0.11			-0.04	0.11
	R^2	0.02		.04*		0.01		0.01	
<i>Coworker report of workplace incivility:</i>									
	Gender	.39**	0.14	.37**	0.14	0.01	0.13	-0.06	0.13
	Self-report of agreeableness			-0.19	0.12			-.27*	0.11
	R^2	0.04		0.05		0		.04*	
	Gender	.40**	0.14	0.24	0.13	0	0.13	-0.02	0.12
	Coworker report of agreeableness			-.58**	0.09			-.47**	0.09
	R^2	0.04		.22**		0		.16**	

Note. * $p < .05$; ** $p < .01$

Table 4. Summary of Hierarchical Regression Analysis for Neuroticism Predicting Perceptions of Workplace Incivility

		USA sample (N = 323)				Romanian sample (N = 141)			
		Step1	SE	Step2	SE	Step1	SE	Step2	SE
<i>Self-report of workplace incivility:</i>									
	Gender	0.35	0.15	.41*	0.15	0.12	0.15	0.14	0.14
	Self-report of neuroticism			.30**	0.1			.30**	0.11
	R^2	0.02		.05**		0.01		.06**	
	Gender	0.32	0.17	.33*	0.17	0.13	0.15	0.11	0.15
	Coworker report of neuroticism			.43**	0.11			0.12	0.1
	R^2	0.02		.09**		0.01		0.02	
<i>Coworker report of workplace incivility</i>									
	Gender	.39**	0.14	.42**	0.14	0.01	0.13	0.02	0.13
	Self-report of neuroticism			0.11	0.1			0.08	0.1
	R^2	0.04		0.04		0		0.01	
	Gender	.40**	0.14	.41**	0.13	0	0.13	0.05	0.13
	Coworker report of neuroticism			.47**	0.09			.25**	0.09
	R^2	0.04		.15**		0		.06**	

Note. * $p < .05$; ** $p < .01$

Hypothesis 2, which proposed that there would be a positive relation between neuroticism and workplace incivility in both the U.S. and Romania, was generally supported. In the U.S. sample, we found a significant relation between self-reported neuroticism and self-reported workplace incivility ($\beta = .18$, $p < .01$). As with Hypothesis 1, the effects are even stronger when considering coworker-reported personality (i.e., neuroticism) in association with coworker reports of workplace incivility ($\beta = .43$, $p < .01$). Finally, when we analyzed the relationship between coworker reports of neuroticism and self-reports of workplace incivility, we found a significant relation ($\beta = .26$, $p < .01$).

In Romania, we also found that self-reported neuroticism is associated with self-reported incivility ($\beta = .23$, $p < .01$), and that coworker reports of neuroticism similarly is associated with coworker reports of incivility ($\beta = .25$, $p < .01$). We did not, however, find a significant relation between coworker reports of neuroticism and self-reports of workplace incivility in the Romanian sample ($\beta = .11$, $n.s.$).

Hypothesis 2a was partially supported for provocative status mediating the relation between neuroticism and workplace incivility, with a similar pattern as Hypothesis 1a. Using bootstrapping, and controlling for gender, the estimated indirect effect of neuroticism on incivility is $.21$,

with a standard error of 0.59. The 95% bias-corrected bootstrap confidence interval (5,000 trials) is from .114 to .346, and because zero is not in the confidence interval, we can conclude that the indirect effect is different from zero. The percentage of the total effect that is mediated is 48.06%.

In Romania, we found the same partial mediation effect as in the U.S. Controlling for gender, we found an indirect effect of coworker-reported neuroticism on coworker-reported incivility, of .09, with a standard error of .06. The 95% bias-corrected bootstrap confidence interval (5,000 trials) is from .029 to .241, and because zero is not in the confidence interval, we can conclude that the indirect effect is different from zero. The percentage of the total effect that is mediated is 37.2%.

Discussion

The purpose of the present study was to examine the role that personality plays in experiences of workplace incivility, and to investigate if this phenomenon is uniquely found in traditionally individualistic countries, or if it may be present in a less traditionally-individualistic country, such as Romania. Specifically, we sought to determine whether or not the personality of workplace incivility targets is associated with the experiences of workplace incivility in two distinctly different countries, and if these targets may actually invite this sort of mistreatment through their behavior. We have added to the literature by looking at incivility in two different parts of the world, viewed by workers and their peers' perceptions of both personality and incivility that the workers are perceived to have experienced.

One notable finding of the present study is that there is a common phenomenon of agreeableness playing a role in one's perception of workplace incivility. In both the U.S. and Romanian samples, individuals who are low in self-reported agreeableness report more workplace incivility than those who are high in agreeableness. This is also the case with coworker reports of agreeableness leading to coworker reports of incivility. Taken together, this appears to indicate that in completely different corners of the world, being surly and argumentative will also be associated with rude behavior from others, whether viewed from an internal, cognitive perspective (self-report) or an outward, reputational perspective (coworker report) of agreeableness. This is in line with the findings of Milam et al. (2009), but noteworthy because we have demonstrated that this occurs not only in the U.S., but in Romania as well.

Further, we found that in both the U.S. and Romania, the low agreeableness of the target actually provokes the incivility. This finding is important because it suggests that coworkers may engage in some sort of low-intensity retaliation for the annoying behaviors that may be exhibited by people who are low on agreeableness. The fact that this effect was only found in coworker reports of agreeableness predicting coworker reports of incivility serves to underscore this notion, as coworker reports of personality are essentially reports of behaviors, rather than cognitions. These findings indicate that behaviors associated with low agreeableness, as seen by coworkers tend to result in uncivil behaviors toward the target, as perceived by the respective targets themselves.

The present study also indicates that in both the U.S. and Romania, individuals who are high in self-reported neuroticism experience workplace incivility with greater frequency than those who report less neuroticism. One explanation for this may be Weiss and Cropanzano's (1996) affective events theory (AET), which suggests that individuals who are high in neuroticism have more general negative evaluations of their surroundings. For these individuals who are characterized by worrying, nervousness, insecurity and self-pity, events which are innocuous to others may actually feel more like workplace incivility.

The phenomenon of individuals high in neuroticism being the targets of workplace incivility is found, regardless of whether neuroticism is viewed from the perception of the actor or peer. In addition, we found that provocative status mediates the relation between coworker-reported neuroticism and coworker-reported workplace incivility, which indicates that not only does the feeling of neuroticism color one's perception of mistreatment, as AET would predict, but perhaps the behaviors that are associated with neuroticism are the types of behaviors that engender workplace incivility.

The addition of workplace incivility as a construct within the workplace psychology domain has been relatively recent, and there is still much to be learned about the perpetrators, the targets, and the experience of being treated rudely, insensitively, and disrespectfully by one's peers. What we hope that we have done in the present study is highlight the notion that target behavior (as a result of one's personality) is a component that explains some of the variance in such treatment, and that there are some types of behavior that are likely to result in mistreatment by one's coworkers, and that this effect is not confined to the U.S., but occurs in Romania as well. In spite of much cultural dissimilarity between these two countries, the general pattern of those who are low in agreeableness and high in neuroticism being treated uncivilly by coworkers appears to occur in both of these countries.

The common findings in the present study are particularly notable as the present study has investigated this phenomenon from two disparate countries. The present study also underscores the notion that not all measures will indicate these types of relations, and that common-method variance may be at work in some of these findings. There is a common general pattern in both countries of self-reported personality leading to self-reported outcomes, and coworker-reported personality (behavior) leading to coworker-reported outcomes.

Limitations

In a study like the present study, with data collection efforts in different countries, and coworker as well as self-reports, there are likely several limitations that result. First, the measure of provocative status may not have been comprehensive enough to indicate mediating effects for neuroticism. Future studies should encompass a more thorough and complete measure of this construct. It may be productive to develop the construct further for the purposes of determining motivation for workplace mistreatment.

Second, although measures were carefully translated and backtranslated, there is a slight chance that some of the items were not interpreted in the way that they were intended. This is not likely the case, as all alphas were

generally in line with one another. Finally, the Romanian sample size was much smaller than the U.S. sample. This does not appear to have affected the pattern of results, although we would have preferred more equivalent sample sizes between countries.

Finally, there is a chance that the present findings may be inflated as a result of some sort of common-method bias due to having a common rater, via social desirability (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003) although we attempted to reduce such bias by assuring confidentiality and by instructing participants that there were no “right” or “wrong” answers. In fact, although Meade, Watson, and Kroustalis (2007) report that the effects of common method bias are not typically large in magnitude, the reason we obtained data from our participants’ coworkers was to mitigate any role that common method variance may play in interpreting our results. We are confident that our results illustrate a complete picture of the phenomenon at work.

There are obviously some exceptions to these findings that need to be examined further, that frankly raise interesting questions for future cross-cultural and cross-national research. For example, coworker-reported neuroticism (i.e., behavior) does not significantly predict self-reports of incivility in any way in Romania. There could be a number of explanations that could explain these results. For example, it could be that neurotic behavior is not seen as particularly bothersome or offensive in Romania, at least not deserving of mistreatment. In this respect, the significant effects found for self-reports of neuroticism could entirely be explained by AET, and that the neuroticism is influencing the extent to which these individuals believe they are mistreated. However, there is also the possibility that there are cultural factors at play that allow neuroticism to be less visible of a personality trait than it is in the U.S.

References

- Andersson, L. M., & Pearson, C. M. (1999). Tit for tat? The spiraling effect of incivility in the workplace. *Academy of Management Review*, 24, 452–471.
- Bernstein, J. Y., & Watson, M. W. (1997). Children who are targets of bullying: A victim pattern. *Journal of Interpersonal Violence*, 12, 483–498.
- Bollen, K. A., & Stine, R. (1990). Direct and indirect effects: Classical and bootstrap estimates of variability. *Sociological Methodology*, 20, 115–40.
- Bowling, N. A., & Beehr, T. A. (2006). Workplace harassment from the victim’s perspective: A theoretical model and meta-analysis. *Journal of Applied Psychology*, 91, 998–1012.
- Burnfield, J. L., Clark, O. L., Devendorf, S. A., & Jex, S. M. (2004, April). Understanding workplace incivility: Scale development and validation. Paper presented at the 19th Annual Conference of the Society for Industrial and Organizational Psychology, Chicago.
- Clark, L. A., & Watson, D. (1988). Mood and the mundane: Relations between daily life events and self-reported mood. *Journal of Personality and Social Psychology*, 54, 296–308.
- Cortina, L. M., & Magley, V. J. (2003). Raising voice, risking retaliation: Events following mistreatment in the workplace. *Journal of Occupational Health Psychology*, 8, 247–265.
- Cortina, L. M., Magley, V. J., Williams, J. H., & Langhout, R. D. (2001). Incivility in the workplace: Incidence and impact. *Journal of Occupational Health Psychology*, 6, 64–80.
- De Fruyt, F., DeBolle, M., McCrae, R. R., Terracciano, A., Costa, P. T., & 43 collaborators of the adolescent personality profiles of cultures project. (2009). *Assessment*, 16, 301–311.
- Duffy, M. K., Ganster, D. C., & Pagon, M. (2002). Social undermining in the workplace. *Academy of Management Journal*, 45, 331–351.
- Goldberg, L. R. (1999). A broad-bandwidth, public domain, personality inventory measuring the lower-level facets of several five-factor models. In I. Mervielde, I. Deary, F. D. Fruyt, & F. Ostendorf (Eds.), *Personality psychology in Europe* (Vol. 7, pp. 7–28). Tilburg, The Netherlands: University Press.
- Goodwin, R. D., & Gotlib, I. H. (2004). Gender differences in depression: The role of personality factors. *Psychiatry Research*, 126, 135–142.
- Green, E., Deschamps, J., & Paez, D. (2005). Variation of individualism and collectivism: within and between 20 countries. *Journal of Cross-Cultural Psychology*, 36, 321–339.
- Hofstede, G. H. (2001). *Culture’s consequences: Comparing values, behaviors, institutions, and organizations across nations*. Thousand Oaks, CA: Sage.
- Hofstede, G. (2012). *National culture*. Retrieved from <http://geert-hofstede.com/countries.html>
- Hofstede, G., & McCrae, R. R. (2004). Personality and culture revisited: Linking traits and dimensions of culture. *Cross-Cultural Research*, 38, 52–88.
- Hogan, R., Hogan, J., & Roberts, B. (1996). Personality measurement and employment decisions: Questions and answers. *American Psychologist*, 51, 469–477.
- House, R. J., Hanges, P. J., Javidan, M., Dorfman, P. W., & Gupta, V. (2004). Culture, leadership, and organizations: The GLOBE study of 62 societies. *Journal of Cross-Cultural Psychology*, 36, 628–630.
- Kallasmaa, T., Allik, J., Realo, A., & McCrae, R. R. (2000). The Estonian version of the NEO-PI-R: An examination of universal and culture-specific aspects of the Five-Factor Model. *Euro-pean Journal of Personality*, 14, 265–278.
- Kaplan, S., Bradley, J. C., Luchman, J. N., & Haynes, D. (2009). On the role of positive and negative affectivity in job performance: A meta-analytic investigation. *Journal of Applied Psychology*, 94, 162–176.
- Kern, J. H., & Grandey, A. A. (2009). Customer incivility as a social stressor: The role of race and racial identity for service employees. *Journal of Occupational Health Psychology*, 14, 46–57.
- Lee, K., Ashton, M. C., Morrison, J. C., & Dunlop, P. D. (2008). Predicting integrity with the HEXACO personality model: use of self- and observer reports. *Journal of Occupational and Organizational Psychology*, 81, 147–167.
- Leung, A. S. M., Wu, L. Z., Chen, Y. Y., & Young, M. N. (2011). The impact of workplace ostracism in service organizations. *International Journal of Hospitality Management*, 30, 836–844.

- McCrae, R. R. (2000). Trait psychology and the revival of personality and culture studies. *American Behavioral Scientist*, 44, 10-31.
- McCrae, R. R., & Costa, P. T. (1987). Validation of the five-factor model of personality across instruments and observers. *Journal of Personality and Social Psychology*, 52, 81-90.
- McCrae, R. R., & Costa, P. T. (1991). Adding Liebe und Arbeit: The full five- factor model and well-being. *Personality & Social Psychology Bulletin*, 17, 227-232.
- McCrae, R. R., & Costa, P. T., Jr. (2003). *Personality in adulthood. A five-factor theory perspective*. New York: The Guilford Press.
- Meade, A. W., Watson, A. M., & Kroustalis, C. M. (2007, April). *Assessing Common Methods Bias in Organizational Research*. Paper presented at the 22nd Annual Meeting of the Society for Industrial and Organizational Psychology, New York.
- Milam, A. C., Spitzmüller, C., & Penney, L. M. (2009). Investigating individual differences among targets of workplace incivility. *Journal of Occupational Health Psychology*, 14, 58-69.
- Narayanan, L., Menon, S., & Levine, E. L. (1995). Personality structure: A culture-specific examination of the five-factor model. *Journal of Personality Assessment*, 64, 51-62.
- Neuman, J. H., & Baron, R. A. (2005). Aggression in the workplace: A social-psychological perspective. In S. Fox, & P. E. Spector (Eds.), *Counterproductive work behavior: Investigations of actors and targets*. Washington, DC: American Psychological Association.
- Notelaers, G., Einarsen, S., De Witte, H., & Vermunt, J. K. (2006). Measuring exposure to bullying at work: The validity and advantages of the latent cluster approach. *Work & Stress*, 20, 289-302.
- Pearson, C. M., Andersson, L. M., & Porath, C. L. (2000) Assessing and attacking workplace incivility. *Organizational Dynamics*, 29, 123-137.
- Pearson, C. M., Andersson, L. M., & Porath, C. L. (2005). Workplace incivility. In S. Fox, & P. E. Spector (Eds.) (pp. 177-200), *Counterproductive work behavior: Investigations of actors and targets*. Washington, DC: American Psychological Association.
- Penney, L. M., & Spector, P. E. (2005). Job stress, incivility, and counterproductive work behavior (CWB): The moderating role of negative affectivity. *Journal of Organizational Behavior*, 26, 777-796.
- Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88, 879-903.
- Porath, C. L., & Erez, A. (2007). Does rudeness matter? The effects of rude behavior on task performance and helpfulness. *Academy of Management Journal*, 50, 1181-1197.
- Porath, C. L., MacInnis, D., & Folkes, V. (2010). Witnessing incivility among employees: Effects on consumer anger and negative inferences about companies. *Journal of Consumer Research*, 37, 292-303.
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, 40, 879-891.
- Reio, T. G., & Sanders-Reio, J. (2011). Thinking about workplace engagement: Does supervisor and coworker incivility really matter? *Advances in Developing Human Resources*, 13, 462-478.
- Robinson, S. L., & Bennett, R. J. (1995). A typology of deviant workplace behaviors: A multidimensional scaling study. *Academy of Management Journal*, 38, 555-572.
- Sava, F. A. (2009). Maladaptive schemas, irrational beliefs, and their relationship with the five factor personality model. *Journal of Cognitive and Behavioral Psychotherapies*, 9, 135-147.
- Shrout, P. E., & Bolger, N. (2002). Mediation in experimental and nonexperimental studies: New procedures and recommendations. *Psychological Methods*, 7, 422-445.
- Shulruf, B., Alesi, M., Ciochina, L., Faria, L., Hattie, J., Hong, F., ...Watkins, D. (2011). Measuring collectivism and individualism in the third millennium. *Social Behavior and Personality*, 39, 173-188.
- Smith, L. M., Andrusyszyn, M. A., & Laschinger, H. K. S. (2010). Effects of workplace incivility and empowerment on newly-graduated nurses' organizational commitment. *Journal of Nursing Management*, 18, 1004-1015.
- Spector, P. E., Cooper, C. L., Sanchez, J. I., O'Driscoll, M., Sparks, K., Bernin, P., ...Yu, S. (2001). Do national levels of individualism and internal locus of control relate to well-being? An ecological level international study. *Journal of Organizational Behavior*, 22, 815-832.
- Steed, L. G. (2002). A psychometric comparison of four measures of hope and optimism. *Educational and Psychological Measurement*, 63, 466-482.
- Taylor, S. G., & Kluepfer, D. H. (2012). Linking perceptions of role stress and incivility to workplace aggression: The moderating role of personality. *Journal of Occupational Health Psychology*, 17, 316-329.
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, 54, 1063-1070.
- Weiss, H. M., & Cropanzano, R. (1996). Affective events theory: A theoretical discussion of the structure, causes and consequences of affective experiences at work. In B. M. Staw, & L. L. Cummings (Eds.), *Research in organizational behavior: An annual series of analytical essays and critical reviews*, (Vol. 18, pp. 1-74). Oxford: Elsevier Science/JAI Press.
- Yamagata, S., Suzuki, Ando, J., Ono, Y., Kijima, N., Yoshimura, K., & Jang, K. L. (2006). Is the genetic structure of human personality universal? A cross-cultural twin study from North America, Europe, and Asia. *Journal of Personality and Social Psychology*, 90, 987-998.

The online Prescriptive Index platform for the assessment of managerial competencies and coaching needs: development and initial validation of the experience sampling Mood Wheel and the Manager-Rational and Irrational Beliefs Scale

Oana A. David^{ab}

^a*Department of Clinical Psychology and Psychotherapy, Babeş – Bolyai University, Cluj-Napoca, Romania;*

^b*Department of Psychology, West University of Timișoara, Romania*

Received 27 August 2013; Accepted 25 October 2013
Available online 6 December 2013

The Prescriptive Index platform is dedicated to the appraisal and development of managerial competencies, and it is comprised of such measures as the multi-rater Freeman-Gavita Prescriptive Executive Coaching (PEC) Assessment for assessing core managerial skills, and the multi-rater Managerial Coaching Assessment System (MCAS) for the evaluation of coaching competencies in managers. The aim of this research was to present the development and psychometric properties of new tools, part of the Prescriptive Index platform, for the assessment of managerial emotional competencies: the web and mobile based Mood Wheel measure using experience sampling procedures, for the assessment of current/previous distress and positive emotions; and the self-report Manager Rational and Irrational Beliefs Scale (M-RIBS) for the assessment of managerial attitudes involved in emotion-regulation processes. Results obtained show that both instruments integrated in the Prescriptive Index platform have adequate initial psychometric support and predictive validity. Practical implications of our findings are discussed in the light of the importance of enabling organizations to accurately identify managerial competencies and coaching needs.

Keywords: managerial competencies, emotional intelligence, managerial coaching skills

Address of correspondence: Correspondence concerning this article should be addressed to: Oana David, Ph.D., Department of Clinical Psychology and Psychotherapy, Babes-Bolyai University, No. 37 Republicii Street, 400015, Cluj-Napoca, Cluj, Romania; e-mail: oanagavita@psychology.ro; tel./fax. +40264-434141.

Acknowledgements: This work was supported by a grant awarded to Oana David from the Romanian National Authority for Scientific Research, CNCS – UEFISCDI, project number PN-II-RU-PD-2011-3-0131.

Introduction

It is currently acknowledged that managers at all levels of an organization can have a crucial impact on organizations's performance (Bono & Judge, 2003). Leadership, emotional intelligence, coaching, organizing and influencing others are considered among the most important managerial competencies (Klein & Ziegert, 2004). Thus, most of the companies choose to invest in various components related to core managerial skills assessment and development.

Emotional competencies (i.e., emotional intelligence) are becoming more and more recognized as important managerial assets. The emotional intelligence term has

been lately connected with other emerging concepts in the organizational settings, like emotional labor and emotion-regulation strategies. Emotional labor refers to work that is relational and involves the manipulations and expression of emotions. The more general emotion-regulation strategies domain has also been linked with organizational strain and distress. Emotion-regulation is a process-oriented model, which theorizes (Gross, 2002; Gross & John, 2003) that emotions may be regulated by (a) altering the stimulus or perceptions of the stimulus (antecedent-focused regulation), or (b) altering the response to the stimulus (response focused regulation). In this model, managerial irrational and rational attitudes/beliefs can function as reappraisal cognitive structures, which are part of the

antecedent-focused regulation; they are used for reappraising or reinterpreting situations so as to modify their subjective meaning, thereby altering the emotional impact of the situation on the person (Raftery & Bizer, 2009). Advances in the research of managerial emotion-regulation is slowed down however, and sometimes research is unconnected to the core fundamental research, due to the lack of adequate tools for the assessment of essential managerial skills, both for designing development plans and monitoring changes.

Prescriptive index aims to fill this important gap in the field, and represents a platform (<http://www.prescriptiveindex.ro>) dedicated to the appraisal and development of managerial skills. The platform allows appraisal of managerial competencies, like leadership, the level of managerial coaching competencies, subjective distress experienced by the employees/managers, emotional intelligence and emotion-regulation, adaptive and maladaptive attitudes in the workplace. A special emphasis is placed upon the appraisal of managerial coaching skills, based on self-reporting, subordinates' report, but also on observational grids. In order to evaluate the main managerial competencies, already tested instruments are used, like the Freeman-Gavita Prescriptive Executive Coaching (FG-PEC) Multi-Rater Assessment (Gavita, Freeman, & Sava, 2012) and the Managerial Coaching Assessment System (MCAS; David & Matu, 2013). The FG-PEC Assessment is a valid measure for managerial skills relevant for the managerial/executive coaching process, able to offer a valid prescriptive profile for coaching, with excellent predictive capabilities for managerial performance. The MCAS is a multi-rater (self-rating, other-rating and also observer-rating) measure for managerial coaching skills which has shown good psychometric properties and was used for measuring the effects of managerial coaching programs. The aim of this research was to supplement the Prescriptive Index with two additional measures for managerial emotional intelligence skills, based on modern techniques, like momentary experience sampling method. The concepts measured by the two additional measures, and their importance for the field is detailed below.

Objectives

The main objectives were to develop an integrated platform for assessing core managerial competencies and investigate psychometric properties of the instruments included. The hypotheses were that the new measures for managerial competencies will prove to have adequate psychometric properties. By addressing these aims, the present paper will contribute to the enrichment of the academic literature in this field by providing the adequate managerial (specific) instruments for assessing core managerial competencies, like leadership, managerial attitudes, emotion-regulation skills, stress resilience, subjective distress, and positive emotions.

Study 1

While maladaptive emotion-regulation strategies have been quite constantly linked to psychopathology (for a review see Aldao, Nolen-Hoeksema, & Schweizer, 2010; Diefendorf, Richard, & Yang, 2008), adaptive emotion-

regulation strategies have been linked to mental health, well-being, job satisfaction and to high performance (Van Rooy & Viswesvaran, 2004). Irrational thinking has been consistently associated with distress and low performance (Silverman & DiGiuseppe, 2001); in contrast, rational thinking is considered important for resiliency and is associated with adaptive behaviors (Harrington, 2005). However, recent findings on emotion-regulation processes have rarely been integrated in the work performance context specificity (i.e., emotional regulation to work performance; Aldao, Nolen-Hoeksema, & Schweizer, 2010; Daus, & Ashkanasy, 2005). One of the main causes is that managerial field lacks specific managerial scales focused on evaluative/appraisal processes involved in emotional reactions (i.e., rational and irrational beliefs), based on modern developments in cognitive science. The accurate assessment of specific managerial irrational beliefs (IBs) and rational beliefs (RBs) can have a major impact on both the practice and research of emotion-regulation processes relevant in the business field, by identifying important mechanisms for coaching programs (Gavita, Freeman, & Sava, 2012).

Although IBs and RBs were conceptualized as rather global evaluative cognitions, spilling over specific situations, it can be assumed that domain-specific instruments might be appropriate at least because of two particular reasons: (a) specific IBs and RBs related to the managerial area possess a higher ecological and face validity than global beliefs due to their item content closely connected to various managerial issues; (b) due to an expected incremental predictive validity based on their specificity matching (i.e., specific beliefs predict better specific domain emotions - in our case work distress). For instance, Stuijbergen and Becker (1994) found that a specific self-efficacy beliefs explained more (38% compared to 6%) of the health-promoting behavior than a general self-efficacy scale. Therefore, it is expected that using a domain-specific rather than a general instrument for evaluative cognitions in organizational setting is beneficial from an applied perspective.

Development of the M-RIBS

Manager Rational and Irrational Beliefs Scale (M-RIBS) was developed based on the view of IBs and RBs as non-polar opposites (DiGiuseppe, Leaf, Exner, & Robin, 1988). M-RIBS considers the recent priming methodologies (i.e., Articulated Thoughts in Simulated Situations; ATSS; Davidson, Robins, & Johnson, 1983; David, Montgomery, Macavei, & Bovjberg, 2004; David, Schnurr, & Belloiu, 2002). An equal number of statements reflecting rational and irrational processes were generated by applying the RIBS-GF (Rational and Irrational Beliefs Scale-General Format; see Montgomery, David, DiLorenzo, & Schnur, 2007) to the managerial domain. The original RIBS-GF is an 8-item scale based on Walen et al.'s (Walen, DiGiuseppe, & Dryden, 1992) discussion of Rational-Emotive Behavior Therapy (REBT). The scale was reviewed and a group of three experts trained in REBT approved the face validity of the items. The total score on the scale is obtained by summing the items, with rational items scored in a reversed way.

The statements of the M-RIBS were designed to reflect evaluative processes in the three content areas found relevant for managers, similar to the areas included in the

Employee-RIBS version of the scale (Gavita & Duta, 2013): (1) Appreciation and performance (Part 1 of the Scale); (2) Control (Part 2 of the Scale); and (3) Comfort (Part 3 of the Scale; see Table 1). Special attention was devoted to wording of the items in order to avoid their contamination by emotions. Three pools (of 10 items each) were generated, one for each content domain, each pool having 5 IBs items, and 5 RBs items. Each of the items was assembled in a 4-point Likert format, ranging from strongly disagree (1) to strongly agree (4). Based on the rational and irrational phrasing, four principal processes were designed for each of them as follows: Demandingness vs. Preference (DEM/PRE), Low Frustration Tolerance vs. Frustration Tolerance (LFT/FT), Awfulizing vs. Badness (AWF/BAD), and Global Evaluation vs. Unconditional Acceptance (GE/UA). GE and its rational counterparts (UA) had two items, one referring to employees (other) and one referring to the manager evaluation/acceptance (self).

Method

Participants

Participants in this study were 109 middle-managers from an Italian multinational banking group based in Romania. Managers were aged between 27 and 54 years, $M = 38.79$ ($SD = 5.92$), with a length of employment between 1 and 14 years (mean employment length = 5.11, $SD = 3.90$). 24.8% of the managers were working in the head quarter of the bank, while 75.2% of the managers were units (branch/agencies) managers.

Measures

The newly developed *Manager Rational and Irrational Beliefs Scale (M-RIBS)* was applied together with the *General Attitudes and Beliefs Scale–Short Form (GABS-SF; Lindner, Kirkby, Wertheim, & Birch, 1999)*.

The GABS is a 26-item self-report measure for irrational cognitive processes (e.g., DEM, AWF, GE and LFT). Items refer to both irrational and rational beliefs, with three scores being computed: (1) an irrational beliefs score, (2) a rational beliefs score, (3) and a total irrational beliefs score (composed of irrational beliefs score plus the reversed rational beliefs score). High scores indicate high levels of rational or irrational cognitions. Adequate psychometric properties have been reported in the literature (Lindner, Kirkby, Wertheim, & Birch, 1999; David, 2007; Cronbach's alpha, $\alpha = .81$).

Procedure

Questionnaires presented above were administered to managers based on a strict protocol regarding the ethical handling of the data and were completed by the managers independently.

Results

Internal consistencies were examined for the P-RIBS total score. The Cronbach's alpha obtained for the P-RIBS Total is $\alpha = .76$, with the inter-item correlations falling within the moderate range. Results show a mean score for the M-RIBS of 68.27 ($SD = 8.81$), for the IBs subscale $M = 22.87$ ($SD = 4.34$) and for the RBs subscale $M = 41.30$ ($SD = 5.86$).

In terms of concurrent validity, the M-RIBS obtained significant correlations with the general irrational cognitions measured with GABS, IBs subscale ($r(107) = .46$, $p = .001$), RBs subscale ($r(107) = -.22$, $p = .021$), GE subscale ($r(107) = .44$, $p = .001$), Achievement DEM ($r(107) = .33$, $p = .001$), Approval DEM ($r(107) = .22$, $p = .01$), Comfort DEM ($r(107) = .36$, $p = .001$), and Fairness DEM ($r(107) = .39$, $p = .001$).

Discussion

The P-RIBS was found to have adequate psychometrical properties. Although our analyses were based on a relative small sample, acceptable internal consistencies and concurrent validity were found for the M-RIBS, showing that it can be further used in investigating managerial attitudes. As hypothesized, the M-RIBS scores were significantly correlated with scores of general rational and irrational cognitions (GABS), showing the measure has adequate construct validity. However, the moderate correlation levels show that although both M-RIBS and the GABS measure rational and irrational processes, they measure different areas of rational and irrational cognitions – general vs. specific managerial. Similar moderate associations were found in Stuijbergen and Becker (1994) when correlating specific and general self-efficacy beliefs.

A limitation of this study is that, given the small sample size, it was not possible to perform more sophisticated factorial analyses in order to investigate the structure of the M-RIBS. Future studies will need to overcome this and to test also the predictive validity of this promising scale. Conclusion of this study is that based on the results obtained, the M-RIBS can be further used in investigating managerial attitudes as appraisals involved in their emotion-regulation processes.

Study 2

The nature of emotions and their measurement was always a top research target, but recently has become a popular research interest also in the workplace field. This is related to the research showing (Hrabluika, Lathamb, & McCarthy, 2012) the negative consequences of the workplace stress on productivity and employees' performance. The aim of this study was to develop and validate a new tool for the assessment of negative and positive emotions in the workplace, the Mood Wheel.

There is little agreement however referring to what emotions are, and consequently emotions were approached in time using different models (e.g., dimensional models, discrete emotions models, componential models). Different theories agree that the concept of emotion refers to a process of changes in different components (subjective experience, physiological arousal, motor expression/behaviors, regulation/cognition), rather than to a homogeneous state (Scherer, 2001). While physiological arousal was considered by some theories to vary only quantitatively (Ellis & DiGiuseppe, 1993), the other dimensions mentioned are susceptible to both quantitative and qualitative variations.

Depending on the component of interest concerning an emotion, different tools were developed, among which the best known and most recent are: the standardized apparatus

for measuring the physiological arousal; the Emotion Facial Action Coding System – EMFACS (Ekman & Friesen, 1978), or Recognizing Emotion in Speech (Dellaert, Polzin & Waibel, 1996) for measuring motor expression, the Self-Assessment Manikin – SAM (Lang, 1985), Geneva Emotions Wheel (GEW; Scherer, 2005) or the Product Emotion Measuring Instrument v7.0 - PrEmo (Desmet, 2003) for measuring the subjective mood.

Russel (1979) developed the circumplex model of emotions, proposing that emotions are disposed in a two-dimensional circular space, based on the control and valence dimensions. This model was quickly adopted in the workplace field, being suited due to its intuitive display, and inclusion of the positive emotions. The Geneva Emotions Wheel (Scherer, 2005) is a newer measure derived from this model, including the discrete emotions format, which maps on a circle the quality of emotions, based on a two-dimensional appraisal space of control and valence (goal conduciveness or obstructiveness), and differentiating between high vs. low arousal emotions; 20 emotion families are displayed and feeling intensity is graphically represented as a set of circles, based on a 0 to 5 Likert scale symbolized as distance from origin. Respondents are required to answer to the question “How do you feel right now?”, by marking the intensity of the emotion terms; each two emotions based on the low and high arousal dimension are clustered and rated together, 10 with positive valence and 10 with negative valence. Research showed (Tran, 2004) that GEW is a valid measure in the case of managers especially under time pressure and in repeated evaluation conditions.

Recent data shows however that subjective distress can be better conceptualized using a binary model (David, Schnur & Belloiu, 2002; David, Montgomery, Macavei, & Bovjberg, 2004; Ellis, 1994), considering their qualitative variations. The unitary model of distress claims that distress levels are falling along a continuum, with high distress referring to high levels of negative affect (e.g., high sadness) while low distress meaning a low level of negative affect (i.e., low sadness). Empirical investigation of the binary model of distress (David, Schnur & Belloiu, 2002; David, Montgomery, Macavei, & Bovjberg, 2004) has found that distress is referring to qualitatively different functional (e.g., worry) and dysfunctional (e.g., anxious) negative feelings. Based on this framework, in negative situations, functional negative feelings mean a negative subjective experience, rational beliefs, moderate arousal, and adaptive behavioral consequences, while dysfunctional negative feelings mean a negative subjective experience, irrational beliefs, and maladaptive behavioral consequences. In other words, the coping potential (adaptive or functional emotion) can be judged only situational, based on these criteria. In other words, based on this qualitative differentiation, a dysfunctional emotion is (Tiba & Szentagotai, 2005) constantly associated with irrational thinking, and maladaptive behavioral patterns, sabotaging thus the person from reaching his/her goals.

Based on the binary model, much less attention has been given however to the qualitative distinction in terms of positive emotions. Tiba and Szentagotai (2005) have investigated how dysfunctional positive emotions relate to evaluative cognitions and arousal, taking into consideration a model of two types of dysfunctional positive emotions, depending on the context when they are experienced: (1)

the pre-goal attainment dysfunctional positive emotions (approach related positive emotion), which refer to high levels of post-goal attainment type of positive emotions when anticipating and moving toward goal attainment, and (2) the post-goal attainment dysfunctional positive emotions (consummatory positive emotions), which refer to high levels of pre-goal attainment type of positive emotions after achieving personal goals. These positive emotions are considered dysfunctional due to the fact that they are associated with behavioral tendencies inappropriate for reaching the goals. For example, pre-goal attainment dysfunctional positive emotions reduce exploratory behavior and increase reward consuming behavior. Furthermore, when they meet their goals, subjects high on irrational beliefs report higher levels of pre-goal attainment positive emotions (Tiba & Szentagotai, 2005). Arousal seem to play an important role also for positive emotions, since they found that when individuals meet their goals, arousal is mediating the relations between demandiness as irrational cognition and pre-goal positive emotions.

Both functional and dysfunctional feelings can be of low, medium, or high intensities. Thus, the distinction between them can be made in terms of both quality (people have qualitatively different feelings; e.g., sad versus depressed) and intensity (each of them can be more or less intense; e.g., slightly sad, very sad; slightly depressed, very depressed etc). The Profile of Emotional Distress (PED; Opris & Macavei, 2005) is the first instrument developed based on the binary model of distress and the positive activation – negative activation (PANA) model. The PED has adequate psychometric properties and was successfully used in clinical research (Opris & Macavei, 2005).

Based on these considerations, the aim of this research was to conciliate the binary with the dimensional models of emotions, considering that they offer great potential for measuring affect in the workplace field. The Mood Wheel was thus developed based on the dimensional circumplex model, but integrating (1) recent derivative measures (GEW), (2) qualitative distinctions of the binary model of emotions, by considering functional and dysfunctional items separately, and (3) modern experience sampling method (ESM; Larson & Csikszentmihalyi, 1983) based on the event–mood–behavior relations, derived from Affective Events Theory (Weiss & Cropanzano, 1996; Miner, Glomb, & Hulin, 2005).

Development of the Mood Wheel

Mood Wheel was developed using the circular arrangement of discrete emotion terms (Scherer, 2005) based on three dimensions: valence, control and functionality. In light of the findings from the binary model of emotions, showing that both negative and positive emotions can have adaptive consequences (David, Montgomery, Macavei, & Bovjberg, 2004), the functionality dimension can be considered relevant. Functionality was judged as adaptiveness of the actions or context appropriateness of behavioral tendencies associated with the emotions; for example, in the organizational field, reaching performance related goals can be an important criteria to judge the functionality of both negative and positive emotions, together with their underlying cognitions and subjective experiences.

Based on the factor analysis structure of the PED (Opris & Macavei, 2005), the empirical data on the binary model of emotions (David, Montgomery, Macavei, & Bovjberg, 2004; Tiba & Szentagotai, 2005) and the circumplex model (Russel, 1983), 16 negative emotions and 16 positive emotions items were included in the Mood Wheel, on a valence x control x functionality space. Half of the items were functional and half of them dysfunctional, half positive and half negative, while half were high control and half low control. The same range of Likert scale 1-5 with the PED was used, where 1=very little, 2=a little, 3=moderately, 4=quite a bit, and 5=extremely. The 0 level was excluded from the Likert range in order to be able to leave the option of not rating emotions when not felt. The option of not rating all emotions is left open when using the measure for experience sampling method, the instruction being in this case “*You can find below a list of words describing feelings that people can experience. Please read each word carefully and then indicate to what extent you are feeling each of those feelings right now*”. When one is interested in measuring mood as trait (in general) or over a certain period of time (a week, or a couple of weeks), Mood Wheel can be also used with forced rating of all items, and then the 1 level becomes *not at all or very little*. In this case, the instruction is modified to “*You can find below a list of words describing feelings that people can experience. Please read each word carefully and then indicate to what extent you have felt each of those feelings in general/during the past few weeks/during this week.*”

Two versions of display have been developed: a web based version for the Prescriptive Index platform, and a mobile IOS version – the Mood Wheel app (Appendix 1), in English and Romanian. Thus, the variance over time in events, mood, and behavior in work settings can be easily registered based on the experience sampling method (Larson & Csikszentmihalyi, 1983). A total distress score and a total positive feelings score can be obtained, but also scores on subscales on functional negative emotions, and dysfunctional negative emotions, by adding the responses on items and squaring the sum on the number of items added.

Method

Participants

82 employees filled the Mood Wheel part of another study investigating the effects of emotion-regulation strategies. They were aged between 15 and 71 years old ($M_{age}=38.42$, $SD=14.10$), with 79.9% being White Caucasian, 3.8% African American, 2.6% Hispanic/Latino, and 2.6% Asian. 65.4% were males, and 46.2% of the participants were married. In terms of their education levels, 7.7% had high school, 17.9% were licensed, 33.3% had a master degree, 10.3% a doctorate and 16.7% post-doctoral studies. Most of the participants were psychologists (22%), followed by psychotherapist (6.4%), economists and professors (each 3.8%), medical doctor, coach, social worker and manager (each 2.6%), engineer, human resources specialist, researcher, and aviator (each 1.3%).

Measures

Participants accessed the mobile version (app) of the Mood Wheel. They filled in the demographics, the Mood Wheel, and chose their type of main irrational thinking at that moment from a list (domain, process, and area, based on Wallen, DiGiuseppe, & Dryden, 1992). The Mood Wheel instruction was “*You can find below a list of words describing feelings that people can experience. Please read each word carefully and then indicate to what extent you have felt each of those feelings in during the past few weeks.*”

Procedure

Participants were asked to rate their mood once per week when accessing the app. The study was approved by the University Institutional Review Board, and participants signed electronically informed consent forms.

Results

Results show a Cronbach’s alpha for the Mood Wheel total distress score of $\alpha = .90$, for the Dysfunctional negative emotions subscale $\alpha = .84$, for the Functional negative emotions subscale, $\alpha = .85$, for the Positive emotions score $\alpha = .92$, the Dysfunctional positive emotions score $\alpha = .89$, and the Functional positive emotions score, $\alpha = .84$.

Correlations between the subscales are presented in Table 1.

Table 1. Correlations between the Mood Wheel subscales and total scores

Mood Wheel subscales	FNE	DNE	FPE	DPE	NETS	PETS
FNE	1	.66**	.42**	.38**	.91**	.41**
DNE	.66**	1	.17	.20	.90**	.19
FPE	.42**	.17	1	.91**	.33**	.97**
DPE	.38**	.20	.91**	1	.32**	.97**
NETS	.41**	.19	.97**	.97**	.33**	1
PETS	.91**	.90**	.33**	.32**	1	.33**

Note: * $p < .01$; ** $p < .05$. FNE=Functional negative emotions; DNE=Dysfunctional negative emotions; FPE=Functional positive emotions; DPE=Dysfunctional positive emotions; NETS=Negative emotions total score; PETS=Positive emotions total score.

For estimating test-retest reliability, 13 of the participants reassessed their mood using the Mood Wheel after after 1 week time. The test-retest correlations obtained are presented in the Table 2.

Table 2. Test-retest correlations for Mood Wheel subscales and total scores

Subscales	FNE	DNE	FPE	DPE	NETS	PETS
FNE	.65					
DNE		.72*				
FPE			.45			
DPE				.80		
NETS					.66	
PETS						.67

Note: * $p < .01$; ** $p < .05$. FNE=Functional negative emotions; DNE=Dysfunctional negative emotions; FPE=Functional positive emotions; DPE=Dysfunctional positive emotions; NETS=Negative emotions total score; PETS=Positive emotions total score.

Descriptive statistics for the Mood Wheel scores are presented in Table 3.

Table 3. Descriptive statistics for the Mood Wheel scores.

<i>Scores for Mood Wheel</i>	<i>Min.</i>	<i>Max.</i>	<i>M</i>	<i>S.D.</i>
Functional negative emotions	1.00	4.13	2.09	.80
Dysfunctional negative emotions	1.00	4.50	1.81	.75
Functional positive emotions	1.00	4.00	2.12	.83
Dysfunctional positive emotions	1.00	4.13	2.26	.84
Negative emotions total score	1.00	4.31	1.95	.70
Positive emotions total score	1.00	4.06	2.19	.82

For testing concurrent validity, the types of irrational cognitions selected by participants were used. Since demandingness (DEM) is the principal irrational process, it was expected to be correlated with dysfunctional negative emotions and total distress. Significant differences in terms of higher levels of dysfunctional negative emotions were found for the participants holding DEM processes of irrational thinking compared to the ones reporting low frustration tolerance (LFT; $F(4,82)=2.37$, $p=.048$; LSD $MD=4.70$, $p=.03$), and tendencies in the same line for global evaluation (GE, other-downing and life-downing). Again, only for dysfunctional negative emotions, higher levels of irrational cognitions in the achievement area were registered compared to all the other contents, $F(3,82)=2.93$, $p=.04$, comfort ($MD=3.80$, $p=.05$), approval ($MD=4.77$, $p=.021$), and fairness ($MD=6.14$, $p=.025$).

Discussion

In this study, the aim was to describe the development of a new measure integrated in the Prescriptive Index platform for managerial competencies assessment, the Mood Wheel. The Mood Wheel is derived from the dimensional models and binary model of emotions, using the valence, control and functionality dimensions. The Mood Wheel measures emotions offering a variety of options: in general or at work, as momentary experience sampling mood or over a longer period of time (weekly, in general).

The Mood Wheel was found to show adequate reliability for its total scores based on valence and functionality, in the case of the negative valence emotions. This was expected since the binary model was initially proposed for distress and received support in this context (David, Schnurr, Belloiu, 2002). The binary model was strongly supported for the negative dysfunctional subscale by its associations with reports of demandingness, as proposed by the theory. The relevance of the binary model of distress for the managerial field was supported by the finding that higher levels of dysfunctional negative emotions were associated with demandigness processes and achievement content of irrational cognitions.

Results obtained for the positive emotions show very high correlations between their dysfunctional and functional forms, suggesting a great overlapping among them. Furthermore, we did not find associations for the positive emotions with irrational cognitions. Our results should however be interpreted carefully due to the low statistical power. There is data (Tiba & Szentagotai, 2005) supporting the assertion that binary model applies to positive emotions, showing the importance of the context (pre-goal attainment/post-goal attainment) when judging

the functionality of positive emotions. Future studies should further investigate the functionality dimension of positive emotions taking into account more details related to the goal attainment context and thus such information will be integrated in the new versions of the Mood Wheel.

Present study brings important contributions by proposing a new measure, based on relevant empirical tested models of emotions, especially suited for the workplace settings. The Mood Wheel allows registering the momentary mood when used on tablets and smartphones, but can be also used web-based. Future studies should include a larger sample and perform factor analyses to test the factorial structure of the measure. Also, future studies should include standardized measure of the criteria for deciding the functionality of emotions, like goals attainment, performance and cognitions.

General discussion

From the cognition-based models of managerial behavior, managerial attitudes and emotions are considered important predictors of behavioral output at work. The aim of this research was to describe the development and validation of two new measures for emotion intelligence integrated in the Prescriptive Index platform for managerial competencies assessment. Two studies were conducted in order to develop and investigate the psychometric properties of the new measures of momentary and general emotions, and managerial evaluative cognitions.

The new measures developed offer innovative tools responding to the needs of the field. The M-RIBS is the first self-report scale measuring rational and irrational beliefs of the managers, based on the cognitive-behavior theories and emotion-regulation field. The Mood Wheel is the first measure conciliating the new empirical findings in the dimensional models (Scherer, 2005) and those in the binary models of distress. Additionally, the Mood Wheel offers the possibility to be used in the experience sampling method (Larson & Csikszentmihalyi, 1983), considered essential for the study of dynamic workplace variables (Miner, Glomb, & Hulin, 2005). Results showed that the two measures have adequate initial psychometric properties and provide support of the use of their use for measuring emotions and cognitions in the workplace.

The validation of the Mood Wheel and M-RIBS has a number of implications to the organizational emotion-regulation field research and interventions. Specifically, they have the potential to bring further understanding of managers' cognitive processes, distress, positive mood, and performance. The measures can be used as valid instruments to rate changes after managerial development processes, and moreover cognitive and behavioral interventions. However, further research is needed in order to investigate their factorial design and psychometric properties.

The Prescriptive Index platform for the evidence-based assessment and development of managerial skills was complimented with two new measures based on the recent findings on the top-down emotion-regulation strategies. The Mood Wheel and M-RIBS instruments will allow accurate assessment of specific managerial emotion-regulation constructs.

References

- Aldao, A., Mennin, D. S., Linardatos, E., & Fresco, D. M. (2010). Differential patterns of physical symptoms and subjective processes in generalized anxiety disorder and unipolar depression. *Journal of Anxiety Disorders*, 24, 250-259. doi: .1016/j.janxdis.2009.12.001
- Bono, J., & Judge, T. (2003). Self-concordance at work: toward understanding the motivational effects of transformational leaders. *Academy of Management Journal*, 46, 554-571.
- Daus, S. D., & Ashkanasy, N. M. (2005). The case for the ability based model of emotional intelligence in organizational behavior. *Journal of Organizational Behavior*, 26(4), 453-466. doi: 10.1002/job.321
- David, D. (2007). *Sistem de evaluare clinica [Clinical assessment system]*. RTS Press: Cluj.
- David, O. A., & Matu, S. A. (2013). How to tell if managers are good coaches and how to help them improve during adversity? The managerial coaching assessment system and the rational managerial coaching program. *Journal of Cognitive and Behavioral Psychotherapies*, 13(2a), 259-274.
- David, D., Montgomery, G., Macavei, B., & Bovbjerg, D. (2005). An empirical investigation of Albert Ellis' binary model of distress. *Journal of Clinical Psychology*, 61, 499-516. doi: 10.1002/jclp.20058
- David, D., Schnur, J., & Belloiu, A. (2002). Another search for the "hot" cognitions: Appraisal, irrational beliefs, attributions, and their relation to emotion. *Journal of Rational-Emotive and Cognitive-Behavior Therapy*, 20(2), 93-131. doi: 10.1023/A:1019876601693
- Davison, G. C., Robins, C., & Johnson, M. K. (1983). Articulated thoughts during simulated situations: A paradigm for studying cognition in emotion and behavior. *Cognitive Therapy and Research*, 7, 17-40.
- Dellaert, F., Polzin, T., & Waibel, A. (1996). *Recognizing Emotion in Speech*. Carnegie Mellon University: School of Computer Science.
- Desmet, P. M. A. (2003). Measuring emotion; development and application of an instrument to measure emotional responses to products. In: M.A. Blythe, A.F. Monk, K. Overbeeke, & P.C. Wright (Eds.), *Funology: from usability to enjoyment* (pp. 111-123). Dordrecht: Kluwer Academic Publishers.
- DiGiuseppe, R., Leaf, R., Exner, T., & Robin, M.W. (1988). *The development of a measure of rational/irrational thinking*. Paper presented at the World Congress of Behavior Therapy, Edinburgh, Scotland, September.
- Diefendorff, J. M., Richard, E. M., & Yang, J. (2008). Linking emotion regulation strategy to affective events and negative emotions at work. *Journal of Vocational Behavior*, 73, 498-508. doi:10.1016/j.jvb.2008.09.006
- Ekman, P., & Friesen, W. V. (1978). *Facial action coding system: Investigator's guide*. Palo Alto, Calif.: Consulting Psychologists Press.
- Ellis, A. (1994). *Reason and emotion in psychotherapy* (rev. ed.). Secaucus, NJ: Birch Lane.
- Ellis, A., & DiGiuseppe, R. (1993). Are inappropriate or dysfunctional feelings in rational-emotive therapy qualitative or quantitative? *Cognitive Therapy and Research*, 17, 471-477.
- Gavita, O. A., Duta T. (2013). The Employee Rational and Irrational Beliefs Scale: Preliminary Validation. *Transylvanian Journal of Psychology*, 14(1), 19 – 38.
- Gavita, O. A., Freeman, A., & Sava, F. A. (2012). The development and validation of the Freeman-Gavita Prescriptive Executive Coaching (PEC) Multi-Rater Assessment. *Journal of Cognitive and Behavioral Psychotherapies*, 12(2), 159-174.
- Gross, J. J. (2002). Emotion regulation: Affective, cognitive, and social consequences. *Psychophysiology*, 39, 281-291. doi:10.1017/S0048577201393198
- Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology*, 85(2), 348-362. doi:10.1037/0022-3514.85.2.348
- Harrington, N. (2005). Dimensions of frustration intolerance and their relationship to selfcontrol problems. *Journal of Rational-Emotive & Cognitive-Behavior Therapy*, 23(1), 1-20. doi: 10.1007/s10942-005-0001-2
- Hrabluika, C., Lathamb, G. P. & McCarthy, J. M. (2012). Does Goal Setting Have a Dark Side? The Relationship Between Perfectionism and Maximum Versus Typical Employee Performance. *International Public Management Journal*, 15(1), 5-38. <http://dx.doi.org/10.1080/10967494.2012.684010>
- Klein, K. J., & Ziegert, J. C. (2004). Leader development and change over time: A conceptual integration and exploration of research challenges. In D. Day, S. Zaccaro, & S. M. Halpin (Eds.), *Leader development for transforming organizations* (pp. 359-382). Mahwah, NJ: LEA.
- Lang, P. J. (1985). *The cognitive psychophysiology of Emotion: Anxiety and the anxiety disorders*. Hillsdale, NJ: Lawrence Erlbaum.
- Larson, R., & Csikszentmihalyi, M. (1983). The experience sampling method. In H. T. Reis (Ed.), *Naturalistic approaches to studying social interaction*. San Francisco: Jossey-Bass.
- Lindner, H., Kirkby, R., Wertheim, E., & Birch, P. (1999). A brief assessment of irrational thinking: The Shortened General Attitude and Belief Scale. *Cognitive Therapy and Research*, 23, 651-663. doi:10.1023/A:1018741009293
- Miner, A. G., Glomb, T. M., & Hulin, C. L. (2005). Experience sampling mood and its correlates at work. *Journal of Organizational and Occupational Psychology*, 78, 171-193. doi: DOI:10.1348/096317905X40105
- Montgomery, G. H., David, D., DiLorenzo, T., & Schnur, J. B. (2007). Response expectancies and irrational beliefs predict exam-related distress. *Journal of Rational-Emotive and Cognitive-Behavior Therapy*, 25, 17-34. doi:10.1007/s10942-006-0029-y
- Opris, D., & Macavei, B. (2007). The profile of emotional distress; norms for the Romanian population. *Journal of Cognitive and Behavioral Psychotherapies*, 7, 139-159.
- Rafferty, J. N., & Bizer, G. Y. (2009). Negative feedback and performance: The moderating effect of emotion regulation. *Personality and Individual Differences*, 47, 481-486. doi:10.1016/j.paid.2009.04.024

- Russell, J. A. (1979). Affective space is bipolar. *Journal of Personality and Social Psychology*, 37(3), 345–356. doi:10.1037/0022-3514.37.3.345.
- Scherer, K. R. (2001). Emotion, the psychological structure. In: Smelser, N. J. & Baltes, P. B. (Eds.) *International Encyclopedia of the Social and Behavioral Sciences*. Oxford: Pergamon.
- Scherer, K. R. (2005). What are emotions? And how can they be measured? *Social Science Information*, 44(4), 693-727.
- Silverman, S., & DiGiuseppe, R. (2001). Cognitive-behavioral constructs and children's behavioral and emotional problems. *Journal of Rational-Emotive & Cognitive Behavior Therapy*, 19(2), 119-134. doi: 10.1023/A:1011183506003
- Stuifbergen, A., & Becker, H. (1994). Predictors of health-promoting lifestyles in persons with disabilities. *Research in Nursing & Health*, 17, 3-13.
- Tiba, A., & Szentagotai, A. (2005). Positive emotions and irrational beliefs. Dysfunctional positive emotions in healthy individuals. *Journal of Cognitive and Behavioral Psychotherapies*, 1, 53-72.
- Tran, V. (2004). *The influence of emotions on decision-making processes in management teams*. Doctoral thesis, University of Geneva. Retrieved 03.9.2013 from: http://doc.rero.ch/lm.php?url=1000,40,3,20050418165554-KS/1_these-TranV.pdf
- Van Rooy, D. L., & Viswesvaran, C. (2004). Emotional intelligence: A meta-analytic investigation of predictive validity and nomological net. *Journal of Vocational Behavior*, 65, 71-95.
- Walen, S. R., DiGiuseppe, R., & Dryden, W. (1992). *A practitioner's guide to Rational-Emotive Therapy* (2nd ed). Oxford: Oxford University Press.
- Weiss, H. M., & Cropanzano, R. (1996). Affective events theory: A theoretical discussion of the structure, causes and consequences of affective experiences at work. In B. M. Staw & L. L. Cummings (Eds.), *Research in organizational behavior: An annual series of analytical essays and critical reviews* (pp. 1–74). Greenwich, CT: JAI Press.

Appendix 1

Mood Wheel

You can find below a list of words describing feelings that people can experience. Please read each word carefully and then indicate to what extent you are feeling each of those feelings right now.

- 1=very little,
- 2=a little,
- 3=moderately,
- 4=quite a bit, and
- 5=extremely

a. Web-based display



b. Items

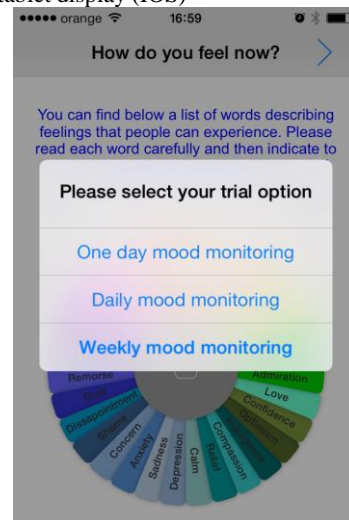
Involvement
Interest
Laughter
Amusement
Elations
Happiness
Pride
Satisfaction

Admiration
Love
Confidence
Optimism
Indulgence
Compassion
Relief
Calm

Depression
Sadness
Anxiety
Concern
Shame
Disappointment
Guilt
Remorse

Envy
Longing
Jealousy
Wary
Disgust
Aversion
Anger
Annoyance

c. Mobile/tablet display (IOS)



Appendix 2

Manager-Rational and Irrational Beliefs Scale

When faced with adverse situations, some managers tend to think that situation absolutely must be the way they want (in terms of absolute must). In the same situation, other people think in preferential terms and accept the situation, even if they want very much that those situations do not happen. In light of these possibilities, please estimate how much the statements below represent the thoughts that you have in such situations.

Using the following scale, indicate in the space provided how true each of these statements is for you.

1. Strongly Agree

2. Somewhat Agree

3. Somewhat Disagree

4. Strongly Disagree

1. Appreciation and performance RIBS

Please think about a situation at work when your performance was not as high as expected/ usually or your work was not appreciated. Try and recall the thoughts you have had in such situations and rate how much the items below represent the thoughts that you have in such situations.

	Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree
1. I absolutely must get a high performance at work and be adequately appreciated or rewarded for my work and I cannot conceive otherwise.	1	2	3	4
2. I really want to get a high performance at work and be adequately appreciated or rewarded, but I realize and accept that things do not have to always be the way I want them to be.	1	2	3	4
3. It would be awful if I do not get a high performance at work or I am not adequately appreciated or rewarded.	1	2	3	4
4. When I do not get a high performance at work or I am not adequately appreciated or rewarded, I think that I am incompetent or worthless.	1	2	3	4
5. It is unbearable and I cannot stand when I do not get high performance at work or I am not adequately appreciated or rewarded.	1	2	3	4
6. I can stand when I do not get a high performance at work or I am not adequately appreciated or rewarded, although it is difficult for me to tolerate it.	1	2	3	4
7. When I do not get a high performance at work or I am not adequately appreciated or rewarded, I think this shows that I am working with incompetent and worthless people.	1	2	3	4
8. It is unpleasant and unfortunate not to get high performance rating or not be adequately appreciated or rewarded, but it is not terrible.	1	2	3	4
9. When I do not get a high performance at work or and I am not adequately appreciated or rewarded, I accept myself as being worthwhile despite my performance.	1	2	3	4
10. When I do not get a high performance at my job or I am not adequately appreciated or rewarded, I understand that this does not impact the worth of my co-workers.	1	2	3	4

2. Control RIBS

Please think about a situation at work when you lost control, or when people in your team acted less competently. Try and recall the thoughts you have had in such situations and rate how much do the items below represent the thoughts that you have in such situations.

11. I must be always in control for delegated tasks and work with competent people.	1	2	3	4
12. I want to be always in control over the tasks at work and work with the most competent people, but I realize and accept that things do not have to always be the way I want them to be.	1	2	3	4
13. It is awful when I am not in control for delegated tasks ,or work with less competent people.	1	2	3	4
14. When I am not in control for delegated tasks or work with less competent people, I think that I am worthless and incompetent.	1	2	3	4
15. It is unbearable and I cannot stand not to have total control over situations at work, or work with less competent people.	1	2	3	4
16. I can stand when I do not get control over the situations at work, or work with less competent people, although it is difficult for me to tolerate it.	1	2	3	4
17. If I am not in control for delegated tasks or work with less competent people, this shows that people are worthless.	1	2	3	4
18. It is unpleasant and unfortunate not to be in control for delegated tasks or work with less competent people, but it is not awful.	1	2	3	4
19. When I am not in control for delegated tasks or work with less competent people, I accept myself as being worthwhile despite this.	1	2	3	4
20. When I am not in control for delegated tasks or work with less competent people, I can accept my co-workers as being worthwhile.	1	2	3	4

3. Comfort RIBS

Cognitive-Behavioral Diagnosis and Coaching Needs Assessment

Please think about a situation at work when you worked in a negative environment, you felt distressed or under extreme pressure at work. Try and recall the thoughts you have had in such situations and rate how much do the items below represent the thoughts that you have in such situations.

21. I absolutely must work in a pleasant environment, to not feel distressed or under great pressure at work.	1	2	3	4
22. I very much want to work in a positive environment, not get distressed or under great pressure at work, but I realize that things do not have to always be the way I want them to be.	1	2	3	4
23. It is awful to work in a negative environment, to feel distressed or under great pressure at work.	1	2	3	4
24. When I work in a negative environment, feel distressed or under great pressure at work, I think this shows that I am worthless.	1	2	3	4
25. It is unbearable to work in a negative environment, to feel distressed or under great pressure at work.	1	2	3	4
26. I can stand when it happens to work in a negative environment, feel distressed or under great pressure at work, although it is difficult for me to tolerate it.	1	2	3	4
27. When I work in a negative environment feel distressed or under pressure at work, this shows that people in my team are bad and worthless	1	2	3	4
28. It is unpleasant and unfortunate to work in a negative environment, to feel distressed or under great pressure at work but it is not awful.	1	2	3	4
29. When I work in a hostile environment, to feel distressed or under great pressure at work, I can accept myself as being worthwhile despite my emotional discomfort.	1	2	3	4
30. When I work in a negative environment, to feel distressed or under great pressure at work, I can accept my co-workers or superiors as being worthwhile despite my emotional discomfort.	1	2	3	4

Locus of control, problem-solving skills appraisal as predictors of waste prevention behaviors

Samaneh Karbalaei ^a, Abbas Abdollahi ^b, Mansor Abu Talib ^b, Siti Nor Yaacob ^c, Zanariah Ismail ^b

^a *Faculty of Environmental Studies, Universiti Putra Malaysia, Selangor, Malaysia;*

^b *Department of Human Development & Family Studies, Faculty of Human Ecology, Universiti Putra Malaysia, Selangor, Malaysia*

^c *Family, Adolescent and Child Research Center (FACE), Faculty of Human Ecology, Universiti Putra Malaysia, Selangor, Malaysia;*

Received 23 May 2013; Accepted 22 November 2013
Available online 6 December 2013

Given that waste generation is a devastating problem, it is necessary that we advance our knowledge about the etiology of waste prevention behaviors. Accordingly, this study sought to increase the existing literature of waste prevention behaviors by examining the relationships among the locus of control, problem-solving confidence, approach-avoidance style, personal control style and participant's age with waste prevention behaviors. Two hundred and forty participants (126 Women, and 114 men) from Putra University (Universiti Putra Malaysia) completed the Locus of Control of Behavior Scale, Waste Prevention Behaviors, Problem-Solving skills Appraisal and Socio-demographic questions. The Structural Equation Modeling (SEM) estimated individuals with internal personal control, effective problem-solving confidence, internal locus of control and approaching styles were more likely to pursue waste prevention behaviors. In addition, men were better than women at problem-solving confidence, approaching style, while women were better than men at internal locus of control, and personal control style. Therefore, these findings reinforce the importance of personality traits in waste prevention behaviors.

Keywords: locus of control, problem-solving skills appraisal, waste prevention behaviors

Address of correspondence: Correspondence concerning this article should be addressed to: Abbas Abdollahi, Faculty of Human Ecology, University of Putra Malaysia, Serdang, Selangor, Malaysia; e-mail: abdollahi.abbas58@yahoo.com; tel./ :+060-0105144205.

Introduction

The increasing amount of waste being generated as a consequence of the rapidly developing economies in developed and developing countries has become a crucial concern for nations and governments (Barr, 2007; Budhiarta, Siwar, & Basri, 2011; Davies, 2003; Swami, Chamorro-Premuzic, Snelgar, & Furnham, 2011). Thus, increasing waste and pollution become as a serious concern for local and national authorities worldwide (Swami et al., 2011). In Malaysia, for example, Ministry of Housing and Local Government reported that the amount of solid waste produced is estimated to be approximately 17.000 tons; however, only 1 to 2 per cent of the waste is recycled, and the rest is sent to landfill and open dumping (Budhiarta et al., 2011). On average, the quantity of waste produced per capita is about 0.85 kg per day, while the figure for per citizen is about 1.7 kg per day (Budhiarta et al., 2011; Sivapalan,

Muhd, Abd, Kamaruzzaman, & Rakmi, 2002). It is predicted that, if the urgent action is not taken, the quantity of waste would rise to around 31,000 tons by 2020 (Manaf, Samah, & Zukki, 2009). Manaf et al. (2009) reported that 80% of the waste in Malaysia is comprised of plastic, paper, and food. It is widely acknowledged that although the packaging industry and economic factors affect waste reduction, the role of the individual in waste prevention is undeniable (Barr, 2007; Knussen, Yule, MacKenzie, & Wells, 2004; Vicente & Reis, 2008). Generally, the solution to reduce waste is divided into two categories: (a) Reducing consumption, and (b) Reusing, reselling or sharing products (Oskamp, 2000). It is readily acknowledged that individual characteristics play an important role in waste prevention (Kurusu & Bortoleto, 2011). This is in line with Oskamp's request from psychologists to play a more active role in promoting behavioral modifications that contribute to the conservation of the environment. Therefore, we have witnessed an increase

in psychological research concerning the conservation of the environment. For example, Barr (2007) identified the situational variables, environmental attitudes, and psychological traits as substantial factors in waste prevention behavior. Situational variables are related to the behavioral context, socio-demographic factors, environmental and behavioral knowledge, and the personal experience of the behavior that influences decision making (Barr, 2007, p. 438-439). Environmental attitude is related to an individual's orientation towards, or concern for, the preservation, restoration, or improvement of the environment. Research in this area suggests that individuals who are more open to change and who are more altruistic are more likely to be environmentally-friendly behavior (Barr, 2007). Previous studies have shown that individuals with environmental concerns are more likely to pursue pro-environmental behavior (Dunlap, Van Liere, Mertig, & Jones, 2000; Swami et al., 2011). There are various psychological factors related to pro-environmental behaviors. For example, individuals who are high in self-efficacy are more likely to pursue pro-environmental behaviors (Barr, 2007). In another study, Stern, Dietz, & Guagnano (1995) reported that egoistic individuals are less likely to pursue pro-environmental behaviors.

Previous studies have found that past behaviors and intentions predict the current or future waste prevention behaviors (Carrus, Passafaro, & Bonnes, 2008; Markowitz, Goldberg, Ashton, & Lee, 2012). For example, Swami et al. (2011) highlighted the role of psychological traits in household waste management behaviors; they found that positive associations existed between conscientiousness and older age with better household waste management. In the same vein, self-efficacy has been identified as an important contributing factor for predicting recycling behavior (Barr & Gilg, 2005; Chan, 1998). In addition, Ojedokun (2011) found that altruism and internal locus of control were powerful predictors of pro-environmental behavior in Nigerians. However, studies about waste prevention behavior are extremely limited. Waste prevention behavior has been defined as people's purchasing behavior that is difficult to change, and their preference to use personal and reusable items instead of disposable items. Some studies have involved garbage reduction in their scope, whereas recycling activities have become a part of the daily routine behavior for residents (Kurusu & Bortoleto, 2011).

Limitation and the present study

Although the available literature has identified a few situational and psychological factors of pro-environmental behavior, in our view, these studies are limited to the confined range of psychological variables that have been investigated. In particular, most studies on psychological antecedents with pro-environmental behaviors have been done on (e.g., self-efficacy, subjective norms, consciousness, openness to experience and egoistic behavior) that make theoretical models, such as Markowitz et al. (2012) and Barr (2007) theory of waste management behaviors. In our opinion, the extant literature on waste prevention behaviors could be extended through a specific focus on personality traits, and cognitive styles that underscore consistency in environmental attitudes. Another rationale for this choice is that problem-solving styles and locus of control assist behavioral modification to contribute better waste prevention behaviors. In addition, it has not been studied in Malaysia.

Therefore, this study endeavors to investigate this void in the literature by concentrating on problem-solving styles, locus of control as predictors of waste prevention behaviors.

Consequently, the current study was conducted as the primary research on personality traits and cognitive styles with waste prevention behaviors, particularly, the association of waste prevention behaviors with the locus of control, and problem-solving skills appraisal. It is obvious that the influence of the psychological variables on waste prevention behaviors is not exhaustive; however, these variables assist in increasing our understanding of personality traits and cognitive styles in respect of waste prevention behaviors. The reasons for choosing the variables are briefly explained, below.

First, we examined the association between the locus of control and waste prevention behaviors. Individuals with an internal locus of control are more likely to believe that they can control affairs in their life. Conversely, individuals with an external locus of control are more likely to believe that external powers, such as destiny, chance and luck, influence affairs in their lives (Rotter, 1990). Individuals with an internal locus of control typically show personal responsibility, participatory skills, problem-solving skills, desirable choices, persistence, self-efficacy and altruism (Burroughs & Mick, 2004; Corbett, 2005; Joo, Joung, & Sim, 2011; Ojedokun, 2011). In addition, research findings have shown that individuals with an internal locus of control are more likely to show pro-environmental behavior (Ojedokun, 2011). When individuals have control over the environment and the self, the environment and the self could be changed to the best condition. Previous studies have reported that an external locus of control may lead to frustration, which may contribute to an environmentally destructive behavior (Mehrabian & Diamond, 1971; Ojedokun, 2011). Therefore, the perception of locus of control may be different in attitude towards the environment and in taking action that prevents waste. It seems conceivable that an internal locus of control would be positively associated with better waste prevention behaviors. Thus, we hypothesize that an internal locus of control is positively correlated with waste prevention behaviors.

Second, we examined the association between problem-solving skills appraisal and waste prevention behaviors. In fact, several studies have shown that cognitive and emotional status and coping styles have pervasive influences on decision making; therefore, individuals with effective problem-solving skills show better environmental decisions (Vining, 1987, 1992). With our best knowledge, if any, limited studied have been done on the relationship between problem-solving skills appraisal with environmental decision-making. D'Zurilla & Goldfried (1971) defined the problem as "an experience or a group of experiences, events or conditions that an individual must react to effectively in his/her environment" (p. 12). According to the definition, individuals encounter to various problems in their lives, and the problem varies from person to person. Therefore, there are individual differences among people by encoding of information, perception and respond to stimulants. According to this definition, everyday people encounter to numerous problems. On the other hand, the solution was defined as a specific answer created from problem solving styles to the specific event (D'Zurilla & Nezu, 2010). D'Zurilla & Nezu (2010) defined "problem-solving as a self-directed cognitive-behavioral process." There is a distinction between problem-

solving skills appraisal and problem-solving skills. The former was defined as one's perception about personal problem-solving style and identify abilities and skills to solve problems in their lives (Heppner, Pretorius, Wei, Lee, & Wang, 2002). Heppner and Petersen (1982) developed the Problem-Solving Inventory (PSI) measure to assess an individual's report of perceived problem-solving. The problem-solving inventory (PSI) is based on the five-stage, sequential problem-solving model process (D'Zurilla & Goldfried, 1971) that was prominent at the time. However, Heppner and Petersen (1982) noted that factor analysis of the PSI generated a model that comprised three factors: problem-solving confidence, approach-avoidance style, and personal control. Problem-solving confidence has been defined as having self-assurance while facing a wide range of problems and trusting in one's own ability in facing the problems. The problem-solving confidence is similar to Bandura's description of self-efficacy, referring to a person's ideas about capacity to do what is required to reach a stated goal (Bandura & Locke, 2003). Social cognitive theory (Bandura & Locke, 2003) additionally describes how increased skill mastery heightens sense of self-efficacy, provides confidence needed to continue and, even, do better. The studies have shown that problem-solving confidence positively associated with self-efficacy (Heppner & Baker, 1997). From a conceptual viewpoint, it seems plausible that problem-solving confidence would be positively correlated with waste prevention behaviors. The approach-avoidance style has been defined as a tendency to approach or avoid facing problems (Heppner & Baker, 1997). The approach-avoidance style resonates with Dollard and Miller's (1950) motivational construct of approach-avoidance. Dollard and Miller explained that some people have tendencies to either tackle problems head-on or may withdraw from confrontation, choosing instead to use the flight versus fight response to the stimulus. Parto (2011) found that approaching style is more likely to associate with self-efficacy, assertiveness, and mental health. To the extent that waste prevention behaviors require an approaching style. In this study, we hypothesize that approaching style is positively associated with waste prevention behaviors. Personal control has been defined as one's ability to control his/her emotions and behavior while facing problems (Heppner & Baker, 1997). The personal control is consistent with Rotter's (1966) theoretical conceptualization of control which assesses emotional responses during the problem-solving process. Several studies have shown positive associations existed among internal personal control style with altruism, empathy, conscientiousness, optimism, happiness, flexibility, self-management and social responsibility (Chinaveh, 2010; Fitzpatrick, Schumann, & Hill-Briggs, 2013). It seems conceivable that internal personal control would positively associate with the waste prevention behaviors. Thus, we hypothesize personal control is positively correlated with the waste prevention behavior. Finally, apart from the locus of control behavior, problem-solving confidence, approach-avoidance style, and personal control style, which are explained above, we hypothesize that older women report better waste prevention behavior.

Method

Participants

Participants in this study comprised 126 female and 114 male students from Universiti Putra Malaysia (age from 17-

46 years, $M \pm SD = 25.53 \pm 5.37$). The racial breakdown of participants was Malay (43.7%), Chinese (28.2%), Indian (20.3%), and Others (7.8%). In addition, in terms of marital status, (55.6%) were single, (35.3%) were married, and (9.1%) were separated or widowed.

Procedure

Seven classes were chosen randomly from different faculties at Universiti Putra Malaysia, and data were collected during one of the regularly scheduled classes. The questionnaires were distributed among 270 students, but 240 questionnaires were received from the students. They completed questionnaires included Waste Prevention Behaviors, Locus of Control of Behaviour Scale, and Problem Solving Inventory.

Materials

Waste Prevention Behaviors (WPB; Kurisu & Bortoleto, 2011). This section comprises 18 items that measure waste prevention behaviors. All questions are based on a 5-point Likert scale from 1 (Never), 2 (Rarely), 3 (Sometimes), 4 (Often), and 5 (Always). The higher score indicates greater waste prevention behaviors, and vice versa. The waste prevention behaviors include shopping behaviors, which is relatively difficult to change, and routine behaviors, such as prefer to use personal items instead of disposable items, garbage reduction, and utilization of reusable items (Swami et al., 2011), for example, "I buy things that are produced with as little packaging as possible"; "I use my bag when going shopping, rather than one provided by the shop"; "I try to repair things before buying new items"; "I reuse paper for writing notes"; "I donate old items to other possible users"; "I try not to buy needless products" and "I bring my cup." In the present study the reliability was $\alpha: .76$. In addition, the convergent validity (AVE) of WPB was $\alpha: .51$, and, the construct reliability (CR) of AES was $\alpha: .703$.

Locus of Control of Behavior Scale (LCB; Craig et al., 2009). This section contains 17 items that measure the locus of control. All questions are based on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). Total scores can be calculated by reverse coding items 2, 3, 4, 6, 9, 10, 11, 12, 14, and 17 and then summing all the items. The total score is from 0 to 85 – a higher score indicates an external locus of control and a lower score indicates an internal locus of control. The LCB had a good internal consistency from $\alpha: 0.75$ to 0.79 (Taiwo, Olapegba, & Adejuwon, 2005). In the present study, the reliability LCB was $\alpha: .73$, the convergent validity (Average Variance Extracted) was 0.56 , and the construct reliability (CR) was 0.70 .

Problem-Solving Inventory (PSI; Heppner, 1988). This inventory comprises 32 items that measure the perceptions of one's problem solving beliefs and style in facing problems and difficulties in one's daily life (Heppner, 1988). All the questions are based on a 6-point Likert scale from 1 (strongly agree) to 6 (strongly disagree). This questionnaire contains three factors: (a) Problem-solving confidence (for example, I encounter new circumstances, I have enough confidence to manage problems that might arise) with eleven items (5, 10, 11, 12, 19, 23, 24, 27, 33, 34, 35). Total scores can be calculated by reverse coding items 11 and 34, and then summing all items. A lower score in PSC indicates a higher problem-solving confidence, and vice versa; (b) Approach-Avoidance (for example, when making a decision, I compare the outcome of every option and weigh them against others)

with sixteen items (1, 2, 4, 6, 7, 8, 13, 15, 16, 17, 18, 20, 21, 28, 30, 31). Total scores can be calculated by reverse coding items 1, 2, 4, 13, 15, 17, 21, and 30, and then summing all items. A higher score in AAS is associated with an avoiding coping style rather than an approaching coping style, and a lower score is associated with an approaching coping style rather than an avoiding coping style; (c) Personal control (for example, when my first efforts to solve a problem fail, I become uneasy about my ability to handle the situation) with five items (3, 14, 25, 26, 32). Total scores can be calculated by reverse coding all items, and then summing all items. A lower score in PC indicates more internal personal control in facing difficulties in one's daily life, and vice versa. Heppner (1988) suggesting that the factors are interrelated and independent; therefore, in this study, three factors were evaluated separately. The PSI had a good internal consistency with an average α : .80 for PSC, and AAS, and .75 for PC (Heppner & Wang, 2003; Heppner, 1988). A wide range of studies have shown that this questionnaire has good validity (Heppner & Wang, 2003). In the present study, the reliability of PSC, AAS, PCS were α : .87, .73, .71, respectively, and the convergent validity (Average Variance Extracted) were 0.58, 0.53, and 0.51, respectively. The construct reliability (CR) were 0.77, 0.74, and 0.71, respectively.

Demographics. A self-report questionnaire was provided to obtain demographic information, such as sex, age, race, and marital status.

Analysis

Missing data for parcels and items (range from .68% to 3.24%) were addressed with the series mean method in SPSS software. The data were considered to be normal because the skewness values were from -.78 to .95, and the kurtosis values were from -1.25 to .88 for all variables. Byrne (2010) stated that if the skewness value is between -2 to +2, and the kurtosis value is between -7 to +7, the data are considered to be normal. For model fit, the goodness of fit indices – chi square/degree of freedom ratio (CMIN/DF), the comparative-fit index (CFI), the goodness-of-fit index (GFI), and the Tucker-Lewis Index (TLI) – were used. The indices have to be equal or greater than 0.90 (Kline, 2010). Furthermore, when the root mean squared error of approximation (RMSEA) is between 0.03 and 0.08 (Kline, 2010), the model has an acceptable goodness of fit. In addition, the group value SEM was used for comparison between the male and female groups. The AMOS 20 software was used for analyzing the data.

Results

Descriptive statistics

As can be seen from the Table 1, inter-correlation among the waste prevention behaviors, locus of control, problem-solving confidence, approach-avoidance style, personal control style, age, standard deviations, and the means are reported.

Table 1. Inter correlation, mean, standard deviation between study variables

	1	2	3	4	5	6
(1) Problem-Solving Confidence	-	.153*	.221**	.171*	-.212**	0.111
(2) Approach-avoidance style		-	.112*	.193**	-.16*	0.08
(3) Personal Control			-	.314*	-.19**	0.119
(4) Locus of control				-	-.26**	.114
(5) Waste prevention behaviors					-	.153
(6) Age						-
M	33.22	48.89	18.18	44.15	50.13	25.54
SD	9.72	17.53	4.33	15.80	15.37	5.36

Note: **p< .001, *p< .05.

Goodness of fit

The model included waste prevention behaviors, locus of control, problem-solving confidence style, approach-avoidance style, personal control style and age as an observed variable. The model showed good fit indices (CMIN/DF= 2.86, p<.01, CFI= .935, GFI= .914, TLI= .90, RMSEA= .068). According to Kline (2010) the model provided an acceptable fit for our sample.

Structural model

The model included locus of control, problem-solving confidence style, approach-avoidance style, personal control style, and age as exogenous variables, and waste prevention behaviors as an endogenous variable. As can be seen from the Figure 1, age had no significant effect on waste prevention behaviors; while locus of control, approach-avoidance style, personal control style, problem-solving confidence style had significant effects on waste prevention behaviours. It can be

seen from the data in Figure 1, that approaching style was associated with better waste prevention behaviors, and greater personal control, whereas internal locus of control behaviors were associated with better waste prevention behaviors. In addition, greater problem-solving confidence style associated with better waste prevention behaviors. These variables explained 28.0% of the variance in waste prevention behaviors. In addition, positive inter-correlations existed between study variables in this study (Figure 1).

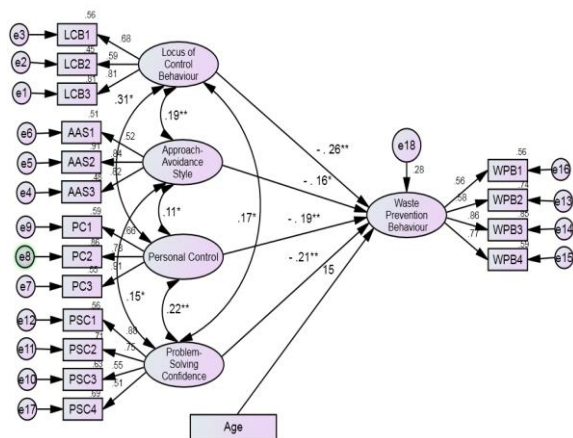


Figure 1. Path analysis of all the study variables

Tests of group differences

Invariance test of measurement model. The comparison between the unconstrained model and the measurement residuals model showed that the unconstrained model with ($\Delta \chi^2 (329.13)$, $df = 166$, $p < 0.01$, $RMSEA = 0.060$, $CFI = 0.903$, $GFI = .891$, $NFI = 0.901$), and the measurement residuals model with ($\Delta \chi^2 (368.82)$, $df = 203$, $p < 0.01$, $RMSEA = 0.058$, $CFI = 0.891$, $GFI = .863$, $NFI = 0.785$) were significant; however, the unconstrained model was better than the measurement residuals model, because chi-square was smaller (Davis, 2008; Hair, Black, Babin, Anderson, & Tatham, 2010). According to the measurement residuals model ($\chi^2 = 54681$, $df = 37$, and $p < 0.05$) in “The Assuming model Unconstrained to be correct”, The findings showed that the impact of likely differences across gender was significant.

Invariance test of structural model. As can be seen from the Figure 2, women showed greater internal locus of control, personal control, and waste prevention behaviors, whereas men showed greater approaching style, and problem-solving confidence style.

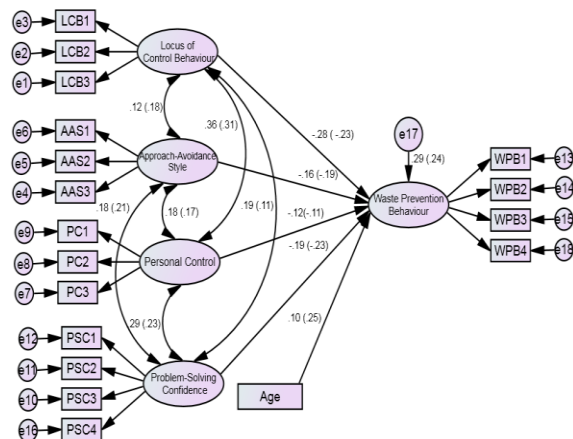


Figure 2. Standardized estimates of multigroup for female, and male. Note: for all estimates $p < .05$, except age is not significant; Results for female are reported first, and results for male are in parenthesis.

Discussion

The findings of this study propose that personality traits, and cognitive styles are helpful predictors for waste prevention behaviors. Locus of control, problem-solving confidence, approach-avoidance style, personal control style and age explained 28.0% of the variance in waste prevention behaviors. In particular, our findings demonstrated that effective problem-solving confidence, approaching style, personal control style and internal locus of control significantly predicted better waste prevention behaviors.

The findings showed that a positive association existed between internal locus of control with waste prevention behaviors. Several studies have shown that locus of control is associated with personal responsibility, effective problem solving skills, desirable choices, persistence, self-efficacy and altruism (Burroughs & Mick, 2004; Corbett, 2005; Joo et al. 2011; Ojedokun, 2011). To the extent that waste prevention behavior is a social responsibility and individuals with an internal locus of control depict greater respect for human and societal rights, individuals with an internal locus of control are more motivated to engage in waste prevention behaviors (Ojedokun, 2011). In addition, the findings of our results demonstrated that women showed more internal locus of control than men. This finding is in agreement with (Lim, Teo, & Loo, 2003).

The present study also showed that problem-solving confidence is significantly and positively associated with waste prevention behaviors. Several studies have shown that problem-solving confidence is associated with self-efficacy, self-esteem, self-management, optimism, personal responsibility, conscientiousness, and positive emotions (Fitzpatrick et al. 2013; Heppner & Wang, 2003; Treffinger, Selby, & Isaksen, 2008). Therefore, individuals with problem-solving confidence style are more motivated to engage in waste prevention behaviors, and more respected to human rights. Moreover, our results showed that men's scores were higher on problem-solving confidence than women.

Another significant point to note is that approaching style is significantly and positively associated with waste prevention behaviors. A number of studies have shown that approaching style is associated with self-management, efficient collaborative skills, good judgments, and decision making skills, altruism, empathy, conscientiousness, optimism, happiness, and social responsibility (Heppner & Baker, 1997; Ojedokun, 2011; Swami et al. 2011; Taiwo et al. 2005; Thoma, Friedmann, & Suchan, 2013; Treffinger et al. 2008; Vining, 1987). To the extent the waste prevention behaviour requires self-management, efficient collaborative skills, good judgments, social responsibility, and decision making skills. Therefore, individuals with approaching style are most likely pursue the waste prevention behaviors. Moreover, our findings showed that man's scores were higher on approaching style than women.

Also, the findings showed that personal control style is significantly and positively associated with waste prevention behaviors. A number of studies have shown that approaching style is associated with self-management, effective collaborative skills, good judgments, and decision making skills, altruism, empathy, conscientiousness, optimism, happiness, and social responsibility (Heppner & Wang, 2003; Ojedokun, 2011; Thoma et al. 2013). Therefore, individuals with internal personal control style are more likely to engage

in waste prevention behaviors, and more respected to human rights. Moreover, our results showed that women's scores were slightly higher on internal personal control style than men.

Overall, the findings of our study rightly emphasize the personality traits, and cognitive styles when examining waste prevention behavior. It is noteworthy that most of the environmental protection frameworks (Barr, Gilg, & Ford, 2001; Barr & Gilg, 2007; Bortoleto, Kurisu, & Hanaki, 2012) have given little consideration to personality traits and cognitive styles in their models. For instance, according to Schwartz's theory (1977), environmental waste is explained using four features: personal and social norms, awareness of consequences, and denial of responsibility (Bortoleto et al., 2012). Schwartz hypothesized that personal norm is influenced by social norms, and that these factors only affect environmental behaviors when an awareness of the consequences is specified, and denial of responsibility is inactivated (Bortoleto et al., 2012). However, psychological factors, such as personality traits and cognitive styles in this theory were not considered. The inclusion of psychological variables in the pro-environmental behavior models could improve the efficiency of these models.

The findings of our study could be useful for policy-makers, teachers and parents to train children and adolescents to improve their problem-solving skills and internal locus of control. Therefore, individuals with these skills not only have an environmentally friendly behavior, but they could also maintain and improve mental health.

The most important limitation lies in the fact that respondents may overstate their answers in the self-report questionnaires for reasons of social desirability; therefore, future research could attempt to measure behaviors using peer-report and direct observation methods. Therefore, future research could examine the other psychological traits and cognitive styles with waste prevention behaviors. This is because personality traits and demographic characteristics have a considerable influence on waste prevention behaviours. For example, future studies could examine spiritual intelligence and well-being with waste prevention behaviours. Of course, it might be helpful to expand on the pro-environmental models that exist in the environmental literature, and it might be useful to improve the efficacy of the environmental prevention models. In addition, policymakers should also consider psychological factors in planning for reducing waste generation.

Lastly, waste prevention behavior can help to avoid wasting economic efficiency, and it is also useful to prevent the non-renewable resource depletion and environmental destruction.

References

- Bandura, A., & Locke, E. A. (2003). Negative self-efficacy and goal effects revisited. *Journal of Applied Psychology*, 88(1), 87. doi:10.1037/0021-9010.88.1.87
- Barr, S. (2007). Factors Influencing Environmental Attitudes and Behaviors A UK Case Study of Household Waste Management. *Environment and Behavior*, 39(4), 435–473. doi:10.1177/0013916505283421
- Barr, S., & Gilg, A. W. (2005). Conceptualising and analysing household attitudes and actions to a growing environmental problem: Development and application of a framework to guide local waste policy. *Applied Geography*, 25(3), 226–247. doi:http://dx.doi.org/10.1016/j.apgeog.2005.03.007
- Barr, S., & Gilg, A. W. (2007). A conceptual framework for understanding and analyzing attitudes towards environmental behaviour. *Geografiska Annaler: Series B, Human Geography*, 89(4), 361–379. doi:10.1111/j.1468-0467.2007.00266.x
- Barr, S., Gilg, A. W., & Ford, N. J. (2001). A conceptual framework for understanding and analyzing attitudes towards household-waste management. *Environment and Planning A*, 33(11), 2025–2048. doi:10.1068/a33225
- Bortoleto, A. P., Kurisu, K. H., & Hanaki, K. (2012). Model development for household waste prevention behaviour. *Waste Management*, 32(12), 2195–2207. doi:http://dx.doi.org/10.1016/j.wasman.2012.05.037
- Budhiarta, I., Siwar, C., & Basri, H. (2011). Current status of municipal solid waste generation in Malaysia. *International Journal on Advanced Science, Engineering and Information Technology*, 2(2), 16–21.
- Burroughs, J. E., & Mick, D. G. (2004). Exploring antecedents and consequences of consumer creativity in a problem-solving context. *Journal of Consumer Research*, 31(2), 402–411. Retrieved from http://www.jstor.org/stable/10.1086/422118
- Carrus, G., Passafaro, P., & Bonnes, M. (2008). Emotions, habits and rational choices in ecological behaviors: The case of recycling and use of public transportation. *Journal of Environmental Psychology*, 28(1), 51–62. doi:http://dx.doi.org/10.1016/j.jenvp.2007.09.003
- Chan, K. (1998). Mass communication and pro-environmental behaviour: waste recycling in Hong Kong. *Journal of Environmental Management*, 52(4), 317–325. doi:http://dx.doi.org/10.1006/jema.1998.0189
- Chinaveh, M. (2010). Training problem-solving to enhance quality of life: implication towards diverse learners. *Procedia-Social and Behavioral Sciences*, 7, 302–310. doi:http://dx.doi.org/10.1016/j.sbspro.2010.10.042
- Corbett, J. B. (2005). Altruism, self-interest, and the reasonable person model of environmentally responsible behavior. *Science Communication*, 26(4), 368–389. doi:10.1177/1075547005275425
- Craig, A., Tran, Y., Hermens, G., Williams, L. M., Kemp, A., Morris, C., & Gordon, E. (2009). Psychological and neural correlates of emotional intelligence in a large sample of adult males and females. *Personality and Individual Differences*, 46(2), 111–115. doi: http://dx.doi.org/10.1016/j.paid.2008.09.011,
- D'Zurilla, T. J., & Goldfried, M. R. (1971). Problem solving and behavior modification. *Journal of Abnormal Psychology*, 78(1), 107.
- D'Zurilla, T. J., & Nezu, A. M. (2010). Problem-solving therapy. *Handbook of Cognitive-Behavioral Therapies*, 3, 197–225.
- Davies, A. (2003). Waste wars-public attitudes and the politics of place in waste management strategies. *Irish Geography*, 36(1), 77–92.
- Davis, J. W. (2008). Handbook of univariate and multivariate data analysis and interpretation with SPSS. *The American Statistician*, 62(3), 268. doi:10.1198/000313008X332287
- Dollard, J., & Miller, N. E. (1950). *Personality and psychotherapy; an analysis in terms of learning, thinking, and culture*. New York, NY: McGraw-Hill.
- Dunlap, R. E., Van Liere, K. D., Mertig, A. G., & Jones, R. E. (2000). New trends in measuring environmental

- attitudes: measuring endorsement of the new ecological paradigm: a revised NEP scale. *Journal of Social Issues*, 56(3), 425–442. doi:10.1111/0022-4537.00176
- Fitzpatrick, S. L., Schumann, K. P., & Hill-Briggs, F. (2013). Problem solving interventions for diabetes self-management and control: A systematic review of the literature. *Diabetes Research and Clinical Practice*, 100(2), 145–161. doi:http://dx.doi.org/10.1016/j.diabres.2012.12.016
- Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2010). *Multivariate data analysis: A global perspective* (c) (Vol. 7). Upper Saddle River, NJ: Pearson. Retrieved from <http://digitalcommons.kennesaw.edu/>
- Heppner, P. P., & Petersen, C. H. (1982). The development and implications of a personal problem-solving inventory. *Journal of Counseling Psychology*, 29(1), 66.
- Heppner, P. Paul. (1988). *The problem solving inventory: Manual*. Palo Alto, CA: Consulting Psychologists Press.
- Heppner, P. Paul, & Baker, C. E. (1997). Applications of the Problem Solving Inventory. *Measurement and Evaluation in Counseling and Development*.
- Heppner, P. Paul, Pretorius, T. B., Wei, M., Lee, D., & Wang, Y.-W. (2002). Examining the generalizability of problem-solving appraisal in Black South Africans. *Journal of Counseling Psychology*, 49(4), 484–498.
- Heppner, P. Paul, & Wang, Y.-W. (2003). Problem-solving appraisal. *Positive Psychological Assessment: A Handbook of Models and Measures*, 60(6), 127–138.
- Joo, Y. J., Joung, S., & Sim, W. J. (2011). Structural relationships among internal locus of control, institutional support, flow, and learner persistence in cyber universities. *Computers in Human Behavior*, 27(2), 714–722. doi:http://dx.doi.org/10.1016/j.chb.2010.09.007
- Kline, R. B. (2010). *Principles and practice of structural equation modeling*. New York: The Guilford Press. Retrieved from <http://books.google.com.my>
- Knussen, C., Yule, F., MacKenzie, J., & Wells, M. (2004). An analysis of intentions to recycle household waste: The roles of past behaviour, perceived habit, and perceived lack of facilities. *Journal of Environmental Psychology*, 24(2), 237–246.
- Kurisu, K. H., & Bortoleto, A. P. (2011). Comparison of waste prevention behaviors among three Japanese megacity regions in the context of local measures and socio-demographics. *Waste Management*, 31(7), 1441–1449. doi:http://dx.doi.org/10.1016/j.wasman.2011.03.008
- Lim, V. K. G., Teo, T. S. H., & Loo, G. L. (2003). Sex, financial hardship and locus of control: An empirical study of attitudes towards money among Singaporean Chinese. *Personality and Individual Differences*, 34(3), 411–429. doi:http://dx.doi.org/10.1016/S0191-8869(02)00063-6
- Manaf, L. A., Samah, M. A. A., & Zukki, N. I. M. (2009). Municipal solid waste management in Malaysia: Practices and challenges. *Waste Management*, 29(11), 2902–2906. doi:http://dx.doi.org/10.1016/j.wasman.2008.07.015
- Markowitz, E. M., Goldberg, L. R., Ashton, M. C., & Lee, K. (2012). Profiling the “pro-environmental individual”: A personality perspective. *Journal of Personality*, 80(1), 81–111. doi:10.1111/j.1467-6494.2011.00721.x
- Mehrabian, A., & Diamond, S. G. (1971). Effects of furniture arrangement, props, and personality on social interaction. *Journal of Personality and Social Psychology*, 20(1), 18–30. doi:10.1037/h0031687
- Ojedokun, O. (2011). Attitude towards littering as a mediator of the relationship between personality attributes and responsible environmental behavior. *Waste Management*, 31(12), 2601–2611. doi:http://dx.doi.org/10.1016/j.wasman.2011.08.014
- Oskamp, S. (2000). A sustainable future for humanity? How can psychology help? *American Psychologist*, 55(5), 496. doi:10.1037/0003-066X.55.5.496
- Parto, M. (2011). Problem solving, self-efficacy, and mental health in adolescents: Assessing the mediating role of assertiveness. *Procedia-Social and Behavioral Sciences*, 30, 644–648.
- Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs: General and Applied*, 80(1), 1. doi:10.1037/h0092976
- Rotter, Julian B. (1990). Internal versus external control of reinforcement. *American Psychologist*, 45(4), 489–493.
- Schwartz, S. H. (1977). Normative influences on altruism. *Advances in Experimental Social Psychology*, 10, 221–279. Retrieved from <http://books.google.com.my/>
- Sivapalan, K., Muid, N. M. Y., Abd, H. S., Kamaruzzaman, S., & Rakmi, A. R. (2002). Comprehensive characteristics of the municipal solid waste generated in Kuala Lumpur. In *Proceedings of the Regional Symposium on Environment and Natural Resources* (Vol. 1, pp. 359–368).
- Stern, P. C., Dietz, T., & Guagnano, G. A. (1995). The new ecological paradigm in social-psychological context. *Environment and Behavior*, 27(6), 723–743. doi:10.1177/0013916595276001
- Swami, V., Chamorro-Premuzic, T., Snelgar, R., & Furnham, A. (2011). Personality, individual differences, and demographic antecedents of self-reported household waste management behaviors. *Journal of Environmental Psychology*, 31(1), 21–26. doi:http://dx.doi.org/10.1016/j.jenvp.2010.08.001
- Taiwo, A. O., Olapegba, P. O., & Adejuwon, G. A. (2005). Psychosocial factors associated with smoking behavior among secondary school adolescents in Ibadan Metropolis. *African Journal for the Psychological Study of Social Issues*, 8(2), 264–279.
- Thoma, P., Friedmann, C., & Suchan, B. (2013). Empathy and social problem solving in alcohol dependence, mood disorders and selected personality disorders. *Neuroscience & Biobehavioral Reviews*, 37(3), 448–470. doi:http://dx.doi.org/10.1016/j.neubiorev.2013.01.024
- Treffinger, D. J., Selby, E. C., & Isaksen, S. G. (2008). Understanding individual problem-solving style: A key to learning and applying creative problem solving. *Learning and Individual Differences*, 18(4), 390–401. doi:http://dx.doi.org/10.1016/j.lindif.2007.11.007
- Vicente, P., & Reis, E. (2008). Factors influencing households’ participation in recycling. *Waste Management & Research*, 26(2), 140–146. doi:10.1177/0734242X07077371
- Vining, J. (1987). Environmental decisions: The interaction of emotions, information, and decision context. *Journal of Environmental Psychology*, 7(1), 13–30.

- Vining, J. (1992). Environmental emotions and decisions. A comparison of the responses and expectations of forest managers, an environmental group, and the public. *Environment and Behavior*, 24(1), 3–34.

Smoke reduction and cessation with psychological interventions: A randomized clinical trial

Laura Arhiri, Daniela Muntele Hendreş, Mihaela-Alexandra Gherman

Universitatea 'Alexandru Ioan Cuza', Iaşi, Romania;

Received 7 October 2013; Accepted 27 November 2013
Available online 6 December 2013

The purpose of our research is to investigate the effectiveness of three types of psychological interventions in both the prevention (Study 1) and treatment (Study 2) of tobacco addiction. Both studies implied a pragmatic parallel-group research design, participants being randomly allocated in one of the three arms of the study in an unblinded manner. The first study consists of 62 occasional, adolescent smokers who were selected according to the criteria proposed and tested in The Framingham Study (Gordon et al., 1975). They were randomly allocated to receive either: (a) an informative intervention; (b) an action and coping planning intervention; (c) an intervention that combined the two aforementioned types in tobacco smoking cessation or (d) a passive control group. Our second study was conducted on a sample of 62 participants who were addicted to cigarette smoking (according to Gordon et al., 1975 and to the DSM IV-R criteria – APA, 2000) between the ages of 23-25 and was aimed at assessing the effectiveness of the same three interventions in tobacco smoking cessation versus a control group. Our findings revealed that the combined intervention was the most efficient longitudinally in both prevention and treatment of nicotine addiction when compared to a control group and to the other two types of intervention. The results are discussed in the light of their contribution to the prevention and treatment of tobacco addiction.

Keywords: randomized trial, nicotine addiction prevention, smoking cessation, coping planning interventions, action planning interventions, informative interventions.

Address of correspondence: Correspondence concerning this article should be addressed to: Daniela Muntele Hendreş, Faculty of Psychology and Educational Sciences, 'Alexandru Ioan Cuza' University, Str. Toma Cozma nr 3, Iaşi, 700554; e-mail: dhendres@mail.psih.uaic.ro.

Introduction

A study conducted in 2011 by the Ministry of Health of Romania in collaboration with the World Health Organization (Global Adult Tobacco Survey – GATS) shows that in Romania the smoking of tobacco cigarettes is one of the most socially acceptable high risk health behavior. The results reported by GATS show that, in 2011 in Romania, smoking was highly prevalent - 26.7% (4.85 million Romanians). Almost a quarter (24.3%) of people aged 15 and over smoked nicotine cigarettes daily, while 2.4% was occasional smokers. The highest rates of smoking were found among Romanians aged 25 to 44 (36.3%); 43.1% started to smoke daily from the ages 17-19, 21.7% of which took up daily smoking at when they were 15 or 16 years old, and only 18.1% started smoking after the age of 20. No significant differences in education were found. Among people addicted to nicotine cigarettes (smoked the first cigarette in the first five minutes after

waking up), 62.6% tried to quit without specialized assistance, 16.4% resorted to nicotine replacement therapy, 2.7% used prescription medication, and 2.8% resorted to counseling services (2.8%). A third of smokers (33.6%) do not wish to quit smoking, with 39.2% of them thinking that smoking does not put their health at risk, while another 38.3% of them thinking that they cannot quit smoking.

The data presented above essentially shows a very high prevalence of smoking among Romanians, inversely proportional to the level of information they have on the health risks associated with this habit. What is worrying with respect to the statistical data presented is the low quality of counseling services to quit smoking (GATS, 2011) and the scarce knowledge among the Romanian population regarding the major health risks of smoking. All of these aspects constitute incentives to motivate empirical research to find the most cost-effective and efficient interventions for smoking cessation that could be implemented in high numbers in Romania.

Psycho-physiological aspects of nicotine addiction

Nicotine addiction involves components - both physical and psychological- that contribute to developing tolerance to the drug, and to creating multiple individualized barriers to quitting smoking (Levinthal, 2002). *Physical dependence* denominates a state that results from the chronic use of an addictive substance which, in time, becomes a normal part of the central nervous system (Glick & Maisonneuve, 1998; Jaffe, 1985). *Psychological dependence* refers to repeatedly using a drug in order to avoid the physical symptoms of withdrawal. As nicotine increases dopamine levels in the brain's reward circuits, it is abused by the smoker in order to keep experiencing the positive reinforcement it provides. Moreover, since it has a direct effect on the nucleus accumbens, nicotine consumption becomes a reward-oriented behavior (Brown & Lichtenstein, 1980; Carboni, Silvagni, Rolando, & Di Chiara, 1999; Halikas, 1997; Volkow, Wang, Fowler, Logan, Gatley, Wong, Hitzemann, & Pappas, 1999).

Theoretical models of health behavior change

Behavior change has long been a central objective in health psychology and it has been conceptualized in various ways via different theoretical models. *The social cognitive theory* (Bandura, 1986; Perry, Barnowski, & Parcel, 1990) posits that human functioning can be explained through the interaction of three factors (the behavior, the environmental context, and personality factors) and as a result, behavioral change can be successfully achieved by increasing a person's self-efficacy and by modeling their environment. *The theory of planned behavior* (Ajzen, 1991; Armitage, & Conner, 2001; Grizzell, 2007) proposes that behavioral change is the outcome of the interaction between *the individual's attitudes towards said behavior or the subjective norms* (the individual's perceptions of what others think he/she should do and his/her inclination to comply with these perceptions) and *the individual's perceived behavioral control* (the self-perceived degree of difficulty in the ability to engage in that behavior). These three psychological aspects lead to *forming the intention* to undergo the behavior change which leads to the actual behavior change, as intention is considered to be the best predictor of behavior change (Ajzen, 1991). *The transtheoretical model* (Prochaska, Johnson, & Lee, 1998) posits that changing a behavior implies progressing through six stages: precontemplation of change, contemplation, preparation, action, maintenance, and termination. The authors point out that therapeutic intervention for behavior change should take into account the stage of change in which the person currently is.

Types of interventions in treating nicotine addiction and in preventing relapses

The interventions cater to the characteristics of the targeted population by taking into account the stage of change in which the individual is currently in, and by offering volitive (*action planning and coping planning interventions*) and motivational (*informative intervention*) support. Also, the informative intervention offers detailed and comprehensive information in order to fill the knowledge gaps of the targeted population. In regard to the targeted behavior – nicotine cigarette smoking – the three

interventions also take into account its psychological addictiveness, being therefore aimed at breaking the behavior-reward sequence by replacing smoking as a pleasurable behavior with other behaviors that offer satisfaction to the subject.

The action planning intervention (Leventhal, Singer, & Jones, 1965), is basically synonymous with intention implementation (Gollwitzer, 1999, consisting in linking the sequence of behaviors required in order to reach one's objective to certain environmental cues by establishing when, where and how to act toward initiating action in the desired direction. Moreover, action planning can help avoid problems with persistence, as the underlying mechanisms leading to the implementation of the behavioral intention can remain effective even in the absence of complete self-control. People who make action plans are more likely to act in their desired direction (Gollwitzer & Brandstätter, 1997) and engage in the planned behavior sooner (Orbell & Sheeran, 2000) compared to those who do not engage in action planning. Numerous benefits in multiple healthcare areas have arisen from action planning, such as increased screenings for cervical cancer (Orbell & Sheeran, 2000), breast self-examinations (Luszczynska & Schwarzer, 2003), adherence to a healthy diet (Verplanken & Faes, 1999), and engagement in regular physical exercise (Sniehotta, Scholz, & Schwarzer, 2005). There have only been a few studies (e.g. Luszczynska & Schwarzer, 2003) in which the effectiveness of action planning was investigated over a period longer than a few weeks. The results of these studies showed that, while action planning assists individuals in intention implementation, their habitual responses and high stress situations (such as deadlines at work) can interfere with successfully carrying out the planned behavior.

The coping planning intervention (Sniehotta, Schwarzer, Scholz, & Schüz, 2005) can help a person to overcome barriers and to cope with hardships firstly by anticipating situations that put the performance of the desired behavior at risk and secondly by planning the coping strategies in detail. Coping planning involves mentally simulating a high-risk situation which would normally trigger an undesired behavioral response (e.g. smoke a cigarette) and pairing it with adequate coping strategies (e.g. "If I feel tense when I get home from work, I will go for a jog in order to calm down, instead of smoking a cigarette"). By deciding in advance what the best strategy is in overcoming unwanted influences (internal or external) on the desired action (Gollwitzer, 1999), people can act toward acquiring new, desired behaviors even when less than ideal circumstances threaten to evoke a counter-intentional behavior. In a research on how to improve people's adherence to physical exercise (Simkin & Gross, 1994), the experimenters asked a sample of women with a sedentary lifestyle who planned to take up physical exercise, to describe in detail how they will manage 10 high-risk situations (bad mood, lack of time, bad weather, tiredness, etc.) that could endanger their intention to carry out the newly acquired behavior. The women who came up with the fewest coping strategies had the highest number of relapses (Simkin & Gross, 1994).

Coping planning and action planning are conceptualized as two separate constructs. Action planning is meant to facilitate initiating and carrying out a certain action, while coping planning is meant to inhibit

distractions that could derail a person from their set goal. While the content and purpose of these two types of strategies are different, the underlying mnemonic, attentional, and perceptual mechanisms are assumed to be essentially the same (Sniehotta et al., 2005). In the case of action planning, no expert advice is needed, since the modalities of action (when, where, how) can be taught through a simple intervention (Leventhal et al., 1965). Coping planning, as a distraction-inhibiting strategy, requires putting some thought into both the high risk situations for a specific subject, and the most effective alternative behavioral responses, which means drawing from personal experience. Both action planning and coping planning are addressed to individuals who are at the preparation stage of behavior change, offering support in the maintenance of the implemented change (Sniehotta et al., 2005).

Informative interventions are addressed to individuals who are in the precontemplation and contemplation stages of change. In regard to health-risk behavior change, focusing on education was shown to have positive effects in changing pro-smoking perceptions (Freedman, Nelson, & Feldman, 2012). In the specific case of nicotine addiction, smokers in Romania are often not familiar with the wide range of negative consequences that smoking has on their health, as the results of GATS (2011) clearly shows, hence we assume that informative interventions will have positive effects on people at different stages as well.

Study 1

The aim of this study is to test the effectiveness of three types of interventions on occasional smokers. Our general objective is to identify the most effective strategy in preventing the development of tobacco addiction among high school pupils who are occasional smokers. Since repeated nicotine use gradually leads to addiction, designing and testing prevention interventions is a more economic and a healthier alternative to treating addiction once it has developed. Therefore, the first objective of this research is to test the effectiveness of an informative intervention, which can be implemented by the school counselor or a teacher, as no formal training is required. The second objective is to test the effectiveness of an intervention consisting in action planning and coping planning, which is usually employed in treating addiction. However, we chose to test its effectiveness in preventing addiction development, as it focuses on adherence to a structured program (one focused on setting personal objectives) and on identifying individual triggers and strategies to overcome them - which addresses the specific emotional needs of this age group. In order to implement this type of intervention, formal training is required, as an understanding of the underlying psychological mechanisms is needed. Consequently, it can only be applied by a school counselor. Another objective is to test the combined effect of the two aforementioned interventions, which would both cover participants' current knowledge gaps on the health risks of nicotine smoking, and also integrate them into an action planning and coping planning program. The advantages of this intervention rest upon its increased complexity (it has a broader action spectrum), and the disadvantages refer to the need to invest more time

resources and formal training of the person implementing them. One last objective is to longitudinally compare the effectiveness of the three interventions (at three, and, respectively, six weeks after they are implemented). For these aforementioned purposes, we investigated the following hypotheses: *H1*: The three types of interventions will reduce the average number of nicotine cigarettes smoked by participants. *H2*: The combined intervention (informative, action and coping planning) will generate the highest cessation rate at both moments of measurement (after three, respectively, six weeks). *H3*: The informative intervention will generate higher cessation rates as compared to the action and coping planning intervention.

Our hypotheses are theoretically supported by the literature on the effectiveness of the three types of interventions (informative, action and coping planning) on both pro-health behavior change (Leventhal et al., 1965; Sheeran & Orbell, 2000; Luszczynska & Schwarzer, 2003; Verplanken & Faes, 1999; Sniehotta, Scholz, & Schwarzer, 2005) and on characteristics of the participants given by the stage of change they are in, according to the transtheoretical model (Prochaska, Johnson & Lee, 1998). The participants in this study were in the precontemplation / contemplation stage, which pointed to their need to become motivated to quit smoking by learning about the health risks associated to it. Moreover, the GATS research conducted in 2011 shows a general scarcity of knowledge about the health risks associated to tobacco smoking among the Romanian population. In conclusion, we expect the informative intervention to generate a higher cessation rate compared to the action and coping planning intervention, and also, we expect that the combined intervention will generate a higher cessation rate than both the informative intervention and the action and coping planning intervention, since it promotes the health behavior change by sustaining both motivation and volition.

Trial design

We used a 4 x 3 mixed experimental design -a between subjects variable - the *type of intervention* (informative intervention - A, action and coping planning intervention - B and combined A and B intervention (C), as well as a passive control group) and a within subject variable - the *moment of measuring* (baseline, after 3 weeks follow-up, and after six weeks follow-up). An open pragmatic superiority trial was conducted in a single location in Huși, Romania to test the effect on two dependent variables -the *average number of cigarettes smoked a day*, and the *cessation rate* - lack of smoking (not even a puff) over a period of seven days.

Participants

The participants in this study were 62 high school pupils between the ages 17-19, grades XI-XII who could be considered as occasional smokers (less than 10 cigarettes / day) according to the Framingham Study (Gordon, Kannel, McGee, & Dawber, 1975). Our participants' confidentiality was ensured by recruiting them with the help of a person that did not take any other part in the experiment, and they were financially rewarded for their participation to this study upon its completion. The recruiter went to all the classrooms that were assigned to the 11th and 12th grade students and, in the absence of teachers, asked if students who smoked occasionally (less

than ten cigarettes a day, each day for at least six months) would like to participate in a study regarding smoking and socialization. The initial number of students checked for eligibility was 454. They were told they would be financially rewarded if they participated all throughout the study and invited the next day at another location where they would meet with the experimenters. In order to further ensure their anonymous participation, students were not asked to state their intention to participate right then (so as their colleagues to remain unaware of their smoking habit) and they were also asked to create an anonymous e-mail address in which to not mention any personal data that could lead to their identification for the purpose of contacting them in the future.

Out of the 454 students informed of the eligibility criteria for participating in this study, 62 of them came to the proposed location. Once they arrived at the location where the study took place, two experimenters checked whether all of the pupils were at the precontemplation / contemplation stage, by asking them if they intended to quit smoking and when. All 62 students declared they met the required criteria by show of hands and were handed a confidentiality agreement signed by the two experimenters which guaranteed their anonymity. Participants were informed about the true purpose of the study (of comparing different kinds of interventions) and asked to not disclose the content of the intervention that they received to their classmates from the other experimental conditions. The pupils were randomly assigned to the experimental conditions by drawing lots and separated in four different rooms. Also, the experimenter mentioned that the financial reward (10 RON) would be awarded to them if they answered to both e-mails which were sent to check their smoking behavior at three and six weeks after the experiment.

After three weeks, participants were contacted via e-mail and asked to state how many cigarettes they smoked, on average, each day, and whether they were successful in not smoking (not even a puff) in the last seven days. The same procedure was followed after six weeks. All 62 participants followed up with answering to both our e-mails and asked to come again at the same location in order to receive their financial reward. None of the participants were excluded from the analysis.

Instruments

The informative intervention consisted in providing our participants with: a. objective data regarding the substances contained by nicotine cigarettes and their effects on the human body; b. information regarding the types of diseases associated to cigarette smoking; c. benefits of quitting smoking. Participants were given this material in the form of a brief informative manual, and the data was also presented orally to them by the experimenter. During and after the oral presentation, participants were invited to ask for further clarification should they not understand something, and they were also encouraged to ask for further reading material on this topic via e-mail if the experimenter's knowledge on certain aspects should prove to be insufficient. The material given to participants was also presented orally because previous studies showed that informative interventions have the best effects in the face-to-face condition (Prochaska, Delucchi, & Hall, 2004).

The action planning intervention was made according to the theoretical model proposed by Sniehotta, Schwarzer, Scholz and Schüz (2005). It consisted in planning for the place, moment and manner in which the smoking cessation would happen. Before the action planning began, participants stated their intentions to quit smoking (in the following six months, according to the stage of change they were in: precontemplation or contemplation) with the purpose of making a commitment to the experimenter (authority figure) and to the other participants (people of the same age, classmates or friends).

The coping planning intervention was created according to the same theoretical model proposed by Sniehotta et al. (2005) and it consisted in the mental simulation of surmounting anticipated obstacles to action - that is, anticipating the specific situations that are likely to put one at the risk of failing in carrying out the desired behavior (not smoking, in this case), and planning in detail for the alternative behavioral responses to these potential future high risk situations. Our participants received a booklet which gave them some examples of high-risk situations which affect smokers after they quit, in the sense that they trigger a powerful craving sensation. Their task was to come up with behaviors alternative to smoking that they could perform if those five situations arose. The next part of the booklet was a journal they were asked to fill out with their own personal high-risk situations - by drawing on their past experience - and with strategies of overcoming each one, every day until their quitting date. They were also presented with some general strategies which may replace the health-risk behavior with a pro-health behavior.

The combined intervention consisted in implementing both the informative intervention and the action planning and coping planning intervention, while the control group received no intervention.

The average number of cigarettes smoked a day was assessed via self-reports provided by participants before the interventions, and after three and six weeks after the intervention. All self-reports were submitted via e-mail.

Cessation rate was operationalized as „not smoking (not even a puff) in the last seven days”, according to Donatelle, Prows, Champeau, Hudson, 2000; Stretcher, Kreuter, Den Boer, Kubrin, Hospers, & Skinner, 1994; Tonstad, Tonnesen, Hajek, Williams, Billing, Reeves, 2006; Toobert, Hampson, Glasgow, 2000. Self-reports were provided by participants via e-mail three and six weeks after the interventions.

Results and Discussion

Two Chi-Squared Tests revealed that the type of intervention our participants underwent had significant effects on their cessation rates ($p < 0.05$); the cessation rate was highest for the participants who took part in the combined intervention both three weeks and six weeks after it, followed by the cessation rate of the participants in the informative intervention, the cessation rate of the participants in the action and coping planning intervention and, respectively, by the cessation rate of the participants in the control group, as shown in Table 1.

Three Cochran's Q Tests showed that the initial cessation rate of the participants changed significantly ($p < 0.05$) at three weeks, and, respectively, at six weeks only

for the participants who underwent the combined intervention and the informative intervention (Table 1). We conducted nine post-hoc McNemar's Tests using Bonferroni adjusted alpha levels of .016 per test (.05/3) which revealed that the cessation rates of the participants

who underwent the informative and the combined interventions were significantly lower compared to their initial cessation rates both three and six weeks after the interventions (Table 1).

Table 1. Results of Chi-Square Tests, Cochran's Q Tests, McNemar's Tests, Shapiro-Wilk Tests, Kruskal-Wallis Tests, Friedman Tests and Wilcoxon Tests for Study 1

	<i>Informative intervention</i>	<i>Action and coping planning intervention</i>	<i>Combined intervention</i>	<i>Control group</i>
<i>Chi-Square tests result^a: $\chi^2_{(3)} = 19.10^{**}$, $V = 0.55^{**}$</i>				
Quit rate 2 ^a	33.33%	14.30%	52.4%	0%
<i>Chi-Square tests result^b: $\chi^2_{(3)} = 20.35^{**}$, $V = 0.57^{**}$</i>				
Quit rate 3 ^b	35.30%	5.90%	58.80%	0%
<i>Cochran's Q tests results</i>				
Quit rate 1 ^c	0%	0%	0%	0%
Quit rate 2 ^a	46.6%	18.75%	68.75%	0%
Quit rate 3 ^b	40%	6.25%	62.5%	0%
	$Q_{(2)} = 12.28^*$	$Q_{(2)} = 4.66$	$Q_{(2)} = 20.18^{**}$	-
<i>Post Hoc McNemar's tests results</i>				
Quit rate 1 ^c – Quit rate 2 ^a	$\chi^2_{(1)} = 5.14^*$	$\chi^2_{(1)} = 1.33$	$\chi^2_{(1)} = 9.09^{***}$	$\chi^2_{(1)} = 0$
Quit rate 1 ^c – Quit rate 3 ^b	$\chi^2_{(1)} = 4.16^*$	$\chi^2_{(1)} = 0$	$\chi^2_{(1)} = 8.1^{***}$	$\chi^2_{(1)} = 0$
Quit rate 2 ^a – Quit rate 3 ^b	$\chi^2_{(1)} = 0$	$\chi^2_{(1)} = 0$	$\chi^2_{(1)} = 0$	$\chi^2_{(1)} = 0$
<i>Shapiro-Wilk tests results</i>				
No. cigarettes/ day 1 ^d	S-W = 0.94 df = 15	S-W = 0.34 df = 16	S-W = 0.90 df = 16	S-W = 0.88 df = 15
No. cigarettes/ day 2 ^e	S-W = 0.79 df = 15*	S-W = 0.91 df = 16	S-W = 0.60 df = 16**	S-W = 0.89 df = 15
No. cigarettes/ day 3 ^f	S-W = 0.81 df = 15*	S-W = 0.90 df = 16	S-W = 0.67 df = 16**	S-W = 0.93 df = 15
<i>Kruskal-Wallis tests results^e $H(3) = 15.89^{***}$</i>				
Mean Rank ^e	25.30	34.06	21.94	45.17
<i>Kruskal-Wallis tests results^f $H(3) = 16.76^{f*}$</i>				
Mean Rank ^f	24.17	38.63	20.84	42.67
<i>Friedman tests results</i>				
Mean RankNo. cigarettes/ day 1 ^d	2.53	2.13	2.47	1.97
Mean RankNo. cigarettes/ day 2 ^e	1.53	1.47	1.66	2.03
Mean RankNo. cigarettes/ day 3 ^f	1.93	2.41	1.88	2
	$\chi^2_{(2)} = 9.5^*$	$\chi^2_{(2)} = 10.30^*$	$\chi^2_{(2)} = 7.87^*$	$\chi^2_{(2)} = 0.051$
<i>Wilcoxon tests results</i>				
No. cigarettes/ day 1 ^d	T = 3***	T = 10.5***	T = 7.5 ***	T = 26.5
No. cigarettes/ day 1 ^e	r = -0.76	r = -0.61	r = -0.74	r = -0.12
No. cigarettes/ day 1 ^d	T = 11***	T = 22	T = 10***	T = 32
No. cigarettes/ day 1 ^f	r = -0.72	r = -0.01	r = -0.66	r = -0.12
No. cigarettes/ day 1 ^e	T = 15*	T = 55***	T = 3	T = 20
No. cigarettes/ day 1 ^f	r = -0.53	r = -0.55	r = -0.33	r = -0.07

Note. ^aQuit rate three weeks after the intervention. ^bQuit rate six weeks after the intervention. ^cQuit rate before intervention. ^dNumber of cigarettes a day smoked by our participants before the intervention. ^eNumber of cigarettes a day smoked by our participants three weeks after the intervention. ^fNumber of cigarettes a day smoked by our participants six weeks after the intervention *p < 0.05, two-tailed. **p < 0.001, two-tailed. ***p < 0.016, two-tailed (Bonferroni correction).

Table 2. Results of Mann-Whitney Tests for Study 1

Type of intervention	Mean rank and coefficients three weeks after the interventions		Mean rank and coefficients six weeks after the interventions	
Informative intervention	13.43		11.90	
Action and coping planning intervention	18.41	U = 81.5, r = -0.27	19.84	U = 58.5*, r = -0.44
Informative intervention	17.37		17.37	
Combined intervention	14.72	U = 99.5, r = -0.16	14.72	U = 99.5, r = -0.15
Informative intervention	10.50		10.90	
Control group	20.50	U = 37.5**, r = -0.57	20.10	U = 43.5**, r = -0.52
Action and coping planning intervention	20.00		21.06	
Combined intervention	13.00	U = 72*, r = -0.39	11.94	U = 55**, r = -0.50
Action and coping planning intervention	12.66		14.72	
Control group	19.57	U = 66.5*, r = -0.38	17.37	U = 99.5*, r = -0.14
Combined intervention	11.22		11.19	
Control group	21.10	U = 43.5**, r = -0.55	21.13	U = 43**, r = -0.55

*p < 0.05, two-tailed. **p < 0.008, two-tailed (Bonferroni correction)

In order to investigate the assumption of normality for our experimental conditions, we conducted a series of Shapiro-Wilk Tests of normality on the reported number of cigarettes smoked a day by our participants; their results showed that the assumption of normality was not met for all experimental conditions, $p < 0.05$ (Table 1), which lead us to analyze these sets of data with non-parametric tests. The group that was exposed to the informative intervention ($N = 15$) smoked, on average, 6.13 cigarettes a day initially ($SD = 2.17$), 3.07 cigarettes a day after three weeks ($SD = 3.71$) and, respectively, 3.53 cigarettes a day after six weeks ($SD = 3.87$). The group that was exposed to the action and coping planning intervention ($N = 16$) smoked, on average, 6.94 cigarettes a day initially ($SD = 1.53$), 5 cigarettes a day after three weeks ($SD = 3.58$) and, respectively, 6.81 cigarettes a day after six weeks ($SD = 2.71$). The group that was exposed to the combined intervention ($N = 16$) smoked, on average, 6.31 cigarettes a day initially ($SD = 2.18$), 2.31 cigarettes a day after three weeks ($SD = 4.03$) and, respectively, 2.69 cigarettes a day after six weeks ($SD = 4.03$). The group that was exposed to the control intervention ($N = 15$) smoked, on average, 7.53 cigarettes a day initially ($SD = 1.36$), 7.67 cigarettes a day after three weeks ($SD = 1.35$) and, respectively, 7.73 cigarettes a day after six weeks ($SD = 1.58$).

The type of intervention our participants went through had significant effects on the number of cigarettes they smoked a day both three and six weeks after the interventions took place ($p < 0.05$), as revealed by the results of two Kruskal-Wallis Tests (Table 1). We conducted twelve post-hoc Mann-Whitney Tests using Bonferroni adjusted alpha levels of .008 per test (.05/6) which revealed that participants in the control group smoked significantly more cigarettes a day than participants in the informative intervention and participants in the combined intervention both three and six weeks after the interventions took place (Table 2).

Four Friedman Tests showed that the number of cigarettes our participants smoked daily before the interventions changed significantly ($p < 0.05$) at three weeks, and, respectively, at six weeks only after they participated in the informative intervention, in the action and coping planning intervention and, respectively, in the combined intervention (Table 1). We conducted twelve post-hoc Wilcoxon Tests using Bonferroni adjusted alpha levels of .016 per test (.05/3) which revealed that the participants who smoked significantly fewer cigarettes a day both three and six weeks after the interventions took place underwent either the informative intervention or the combined one (Table 1).

Study 2

The aim of this study is to test the efficiency of the same three types of interventions that were implemented in Study 1 (the informative intervention, the action planning and coping planning intervention, and the combined intervention – the informative intervention and the action planning and coping planning intervention) on nicotine addicts. The general objective is to identify the most effective strategy in treating nicotine addiction among university students who are addicted to cigarette smoking – they have been smoking over ten cigarettes a day each day, for a period of at least 12 months. The specific objectives

of this study coincide to those of the first study. For this purpose, we investigated the following hypotheses: *H1*: The three types of interventions will reduce the average number of nicotine cigarettes smoked by participants. *H2*: The combined intervention (informative, action and coping planning) will generate the highest cessation rate at both moments of measurement (after three, respectively, six weeks). *H3*: The action and coping planning intervention will generate higher cessation rates compared to the informative intervention.

The participants in this study are identified as being in the preparation stage - they intended to take action in the near future, and they may have even formulated a plan, but may not have entirely committed to it. In consequence, we expect the action planning and coping planning intervention to generate higher cessation rates compared to the informative intervention, and also, we expect that the combined intervention will generate higher cessation rates than both the informative intervention and the action and coping planning intervention, since it is more complex and comprises both the informative intervention and the action planning and coping planning intervention.

Trial design

An open pragmatic superiority trial was conducted in a single site in Iași, Romania. The experimental design used was the same as the one used in Study 1.

Participants

The participants in this study were 62 university students between the ages 23-25, from the „Al. I. Cuza” University, Iași. They had been smoking more than ten cigarettes a day, each day, for a period of at least 12 months, according to the temporal criterion for a substance dependence listed in the DSM IV-R (APA, 2000). They were also considered nicotine addicts according to the criteria proposed and tested in The Framingham Study (Gordon, Kannel, McGee, & Dawber, 1975). Participants were in the preparation stage, and they were recruited by snowball sampling. The same two experimenters that conducted Study 1 went to the smoking designated areas in the student campuses and asked students who were smoking whether they would like to participate in a 6 weeks study meant to test the efficiency of interventions meant to help them quit smoking, provided they met the aforementioned eligibility criteria. If they decided to participate, they were told they would be financially rewarded with 10 RON upon completion. They were also asked to create an anonymous e-mail address in which to not mention any personal data that could lead to their identification for the purpose of contacting them in the future. Moreover, they were asked to inform other colleagues of theirs who smoked of the eligibility criteria and to ask them if they wanted to participate in our study. All students encountered were provided with the experimenters' e-mail addresses written on small sheets of paper which also mentioned the eligibility criteria for participation to this study. Altogether, we invited 318 students to participate to our study, given they met the eligibility criteria. We chose to not ask them about their smoking habits in the group settings in which we recruited them in order to avoid potential discomfort of admitting to smoking a certain amount of cigarettes in the presence of the other people in the smoking designated areas. The

recruitment lasted from mid January 2013 to mid February 2013.

Once we recruited 62 participants by snowball sampling, we randomly assigned them to each of the four conditions by drawing lots and proceeded to organize meetings with each of the four experimental groups separately. Similarly to Study 1, they were only asked to provide the average number of cigarettes they smoked a day. We checked whether all the participants were in the preparation stage according to the trans-theoretical model by asking them when he/she intended to quit smoking. All participants declared they met the eligibility criteria for this study. Just as in study 1, participants were asked to not disclose the content of the intervention that they received to the other participants in this study, in order to not contaminate the results of our research. After three weeks, participants were contacted via e-mail and asked to state how many cigarettes they smoke, on average, each day, and whether they were successful in not smoking (not even a puff) in the last seven days. The same procedure was followed after six weeks.

After three weeks, participants were contacted via e-mail and asked to state how many cigarettes they smoked,

on average, each day, and whether they were successful in not smoking (not even a puff) in the last seven days. The same procedure was followed after six weeks. All 62 participants followed up with answering to both our e-mails and asked to come again at the same location in order to receive their financial reward. None of the participants were excluded from the analysis.

Instruments

The instruments are the same as those used in Study 1.

Results and discussion

Two Chi-Squared Tests revealed that the type of intervention our participants underwent had significant effects on their cessation rates ($p < 0.05$); the cessation rate was highest for the participants who took part in the combined intervention both three weeks and six weeks after it, followed by the cessation rate of the participants in the action and coping planning intervention, the cessation rate of the participants in the informative intervention and, lastly, by the cessation rate of the participants in the control group, as shown in Table 3.

Table 3. Results of Chi-Square Tests, Cochran's Q Tests, McNemar's Tests, Shapiro-Wilk Tests, Kruskal-Wallis Tests, Friedman Tests and Wilcoxon Tests for Study 2

	Informative intervention	Action and coping planning intervention	Combined intervention	Control group
<i>Chi-Square tests result^a: $\chi^2_{(3)} = 19.70^{**}$, $V = 0.56^{**}$</i>				
Quit rate 2 ^a	11.80%	29.40%	58.80%	0%
<i>Chi-Square tests result^b: $\chi^2_{(3)} = 13.55^{**}$, $V = 0.46^*$</i>				
Quit rate 3 ^b	9.10%	27.30%	63.60%	0%
<i>Cochran's Q tests results</i>				
Quit rate 1 ^c	0%	0%	0%	0%
Quit rate 2 ^a	12.5%	33.33%	66.66%	0%
Quit rate 3 ^b	6.25%	20%	46.6%	0%
	$Q_{(2)} = 3$	$Q_{(2)} = 7.6^*$	$Q_{(2)} = 20.18^{**}$	-
<i>Post Hoc McNemar's tests results</i>				
Quit rate 1 ^c – Quit rate 2 ^a	$\chi_{(1)} = 0.50$	$\chi_{(1)} = 3.20$	$\chi_{(1)} = 8.10^{***}$	$\chi_{(1)} = 0$
Quit rate 1 ^c – Quit rate 3 ^b	$\chi_{(1)} = 0$	$\chi_{(1)} = 1.33$	$\chi_{(1)} = 5.14^{***}$	$\chi_{(1)} = 0$
Quit rate 2 ^a – Quit rate 3 ^b	$\chi_{(1)} = 0$	$\chi_{(1)} = 0.50$	$\chi_{(1)} = 1.33$	$\chi_{(1)} = 0$
<i>Shapiro-Wilk tests results</i>				
No. cigarettes/ day 1 ^d	S-W = 0.77 df = 16*	S-W = 0.82 df = 15*	S-W = 0.74 df = 15*	S-W = 0.80 df = 16*
No. cigarettes/ day 2 ^e	S-W = 0.87 df = 16*	S-W = 0.86 df = 15*	S-W = 0.63 df = 15**	S-W = 0.78 df = 16*
No. cigarettes/ day 3 ^f	S-W = 0.93 df = 16	S-W = 0.80 df = 15*	S-W = 0.76 df = 15*	S-W = 0.78 df = 16*
<i>Kruskal-Wallis tests results^e: $H(3) = 26.66^{***}$</i>				
Mean Rank ^e	25.16	29.73	19.97	50.31
<i>Kruskal-Wallis tests results^f: $H(3) = 13.05^{**}$</i>				
Mean Rank ^f	27.19	37.87	20.27	40.38
<i>Friedman tests results</i>				
Mean RankNo. cigarettes/ day 1 ^d	2.75	2.67	2.9	2
Mean RankNo. cigarettes/ day 2 ^e	1.13	1.10	1.37	2
Mean RankNo. cigarettes/ day 3 ^f	2.13	2.23	1.73	2
	$\chi^2_{(2)} = 23.72^*$	$\chi^2_{(2)} = 25.06^*$	$\chi^2_{(2)} = 25.08^*$	$\chi^2_{(2)} = 0$
<i>Wilcoxon tests results</i>				
No. cigarettes/ day 1 ^d - No. cigarettes/ day 1 ^e	$T = 0^{***}$ $r = -0.88$	$T = 0^{***}$ $r = -0.90$	$T = 0^{***}$ $r = -0.86$	$T = 10.5$ $r = 0$
No. cigarettes/ day 1 ^d - No. cigarettes/ day 1 ^f	$T = 102.5^*$ $r = -0.79$	$T = 55^*$ $r = -0.82$	$T = 0^{***}$ $r = -0.82$	$T = 5$ $r = 0$
No. cigarettes/ day 1 ^e - No. cigarettes/ day 1 ^f	$T = 9^{***}$ $r = -0.59$	$T = 78^{***}$ $r = -0.52$	$T = 15^*$ $r = -0.52$	$T = 5$ $r = 0$

Note. ^aQuit rate three weeks after the intervention. ^bQuit rate six weeks after the intervention. ^cQuit rate before intervention. ^dNumber of cigarettes a day smoked by our participants before the intervention. ^eNumber of cigarettes a day smoked by our participants three weeks after the intervention. ^fNumber of cigarettes a day smoked by our participants six weeks after the intervention * $p < 0.05$, two-tailed. ** $p < 0.01$, two-tailed. *** $p < 0.016$, two-tailed (Bonferroni correction).

Table 4. Results of Mann-Whitney Tests for Study 1

Type of intervention	Mean rank and coefficients three weeks after the interventions		Mean rank and coefficients six weeks after the interventions	
Informative intervention	14.44		13.28	
Action and coping planning intervention	17.67	U = 95, r = -0.18	18.90	U = 76.5, r = -0.31
Informative intervention	18.78		18.66	
Combined intervention	13.03	U = 75.5*, r = -0.32	13.17	U = 77.5*, r = -0.30
Informative intervention	8.94		12.25	
Control group	24.06	U = 7, r = -0.82	20.75	U = 60, r = -0.47
Action and coping planning intervention	17.87		18.97	
Combined intervention	13.13	U = 77, r = -0.28	12.03	U = 60.5, r = -0.40
Action and coping planning intervention	10.20		16.00	
Control group	21.44	U = 33*, r = -0.63	16.00	U = 120, r = 0
Combined intervention	9.80		11.07	
Control group	21.81	U = 27**, r = -0.68	20.63	U = 46*, r = -0.53

* $p < 0.05$, two-tailed. ** $p < 0.008$, two-tailed (Bonferroni correction)

Three Cochran's Q Tests showed that the initial cessation rate of our participants changed significantly at three weeks and at six weeks only for the participants who underwent the combined intervention and the action and coping planning intervention, $p < 0.05$ (Table 3). We conducted nine post-hoc McNemar's Tests using Bonferroni adjusted alpha levels of .016 per test (.05/3) which revealed that the cessation rates of the participants who underwent the combined intervention were significantly lower as compared to their initial cessation rates both three and six weeks after the intervention (Table 3).

In order to investigate the assumption of normality for our experimental conditions, we conducted a series of Shapiro-Wilk Tests of normality on the reported number of cigarettes smoked a day by our participants; their results showed that the assumption of normality was not met for all experimental conditions, $p < 0.05$ (Table 3), which lead us to analyze these data sets with non-parametric tests as well. The group that was exposed to the informative intervention ($N = 16$) smoked, on average, 24.38 cigarettes a day initially ($SD = 7.5$), 7.38 cigarettes a day after three weeks ($SD = 5.94$) and, respectively, 17.31 cigarettes a day after six weeks ($SD = 11.26$). The group that was exposed to the action and coping planning intervention ($N = 15$) smoked, on average, 31.67 cigarettes a day initially ($SD = 7.94$), 12 cigarettes a day after three weeks ($SD = 10.82$) and, respectively, 25.33 cigarettes a day after six weeks ($SD = 14.57$). The group that was exposed to the combined intervention ($N = 15$) smoked, on average, 28.33 cigarettes a day initially ($SD = 9.19$), 7 cigarettes a day after three weeks ($SD = 12.79$) and, respectively, 11.2 cigarettes a day after six weeks ($SD = 14.52$). The group that was exposed to the control intervention ($N = 16$) smoked, on average, 28.13 cigarettes a day initially ($SD = 7.5$), 28.13 cigarettes a day after three weeks ($SD = 8.34$) and, respectively, 28.13 cigarettes a day after six weeks ($SD = 8.34$).

The type of intervention our participants went through had significant effects ($p < 0.05$) on the number of cigarettes they smoked a day both three and six weeks after the interventions took place, as revealed by the results of two Kruskal-Wallis Tests (Table 3). We conducted twelve post-hoc Mann-Whitney Tests using Bonferroni adjusted alpha levels of .008 per test (.05/6) which revealed that participants in the control group smoked significantly more

cigarettes a day than participants in the combined intervention three weeks after the interventions took place (Table 4).

Four Friedman Tests showed that the number of cigarettes our participants smoked daily before the interventions changed significantly ($p < 0.05$) at three weeks, and at six weeks after they participated in the informative intervention, in the action and coping planning intervention and, respectively, in the combined intervention (Table 3). We conducted twelve post-hoc Wilcoxon Tests using Bonferroni adjusted alpha levels of .016 per test (.05/3) which revealed that the participants who smoked significantly fewer cigarettes a day both three and six weeks after the interventions took place underwent the combined one (Table 3).

General Discussion

One of the most important findings of our research is the longitudinal efficiency of the informative intervention in health behavior change for adolescents. Seeing as our participants in Study 1 were occasional smokers, they were either in the experimentation stage of smoking acquisition (during which adolescents repeatedly, but irregularly try cigarettes over an extended period of time) or in the stage of regular use (the pre-addiction stage, during which smoking is used regularly, over a wide variety of contexts), according to Mayhew, Flay, & Mott, 2000. In these stages, the main predictors of smoking are environmental factors (e.g. parental, sibling, and friends' smoking), which create pro-smoking perceptions that can be changed by modifying social norms and focusing on education (Freedman, Nelson, & Feldman, 2012; Tjora, Hetland, Aarø, & Øverland, 2012). Our informative intervention addressed the pro-smoking perceptions by focusing on educating adolescents regarding the health risks of smoking and attempting to change the pro-smoking social norm widely spread in Romania (GATS, 2011).

However, for the participants in Study 2, the positive effects of the informative intervention wore off six weeks after the intervention. This is probably due to the fact that the weight of the pharmacological properties of the drug as a predictor for its repeated usage is directly proportional to how many times the drug is consumed (Goode, 1999). This physiological side of addiction may be related to the fact

that repeated nicotine stimulation enhances the amount of dopamine released in the *nucleus accumbens*, which both affects their reward circuit and leads to smokers' experiencing agitation and discomfort when the nicotine leaves their system (Cosgrove et al., 2009). Seeing as the intensity of these physiological effects is higher for people who smoke more (and have smoked more in the past), participants in Study 2 needed a more complex intervention to help them with smoking cessation. According to the Trans-theoretical Model of Behavior Change, people in the precontemplation / contemplation stages (as our participants in Study 1, who did not plan on quitting smoking in the near future), respond best to being provided with information and to doubts about the harmlessness of their drug use (Connors, DiClemente, Velasquez, & Donovan, 2012), as our results confirmed. On the other hand, people in the preparation stage (as our participants in Study 2) already plan on quitting smoking and thus respond better at being helped to create a concrete plan of action and to remove personal barriers that may stand in the way of implementing the aforementioned plan (Connors et al., 2012). This explains why the longitudinal efficiency of the action and coping planning intervention was better for our participants in Study 2.

Both our studies revealed that the combined intervention was the most efficient one in smoking cessation and reduction the number of cigarettes smoked a day. In what regards our participants in Study 2, this is probably due to the characteristics of the Romanian population from which we extracted the sample that took part in our study. The informative component of the combined intervention had significant effects on the participants in the preparation stage because their levels of knowledge regarding the negative impact of smoking were low, assumption supported by the findings reported in GATS, 2011. As for our participants in Study 1, action and coping planning was shown to increase self-efficacy (O'Brien, Bassett, McNair, 2013), a good predictor of smoking cessation in adolescents (Zhu, Sun, Billings, Choi, & Malarcher, 1999), which is why the addition of the action and coping planning to the informative component of the combined intervention proved to be the most efficient strategy in both smoking cessation and smoking reduction.

Another important finding of our research was the longitudinal efficiency of the combined intervention in smoking reduction. Smoking reduction was shown to be a very good predictor of smoking cessation for addicts (Broms, Korhonen, & Kaprio, 2008) and to greatly contribute, in the case of occasional smokers, in preventing addiction (Doubeni, Reed, & DiFranza, 2010). Future research should examine the long-term effects of the combined intervention proposed by us over a more extended period of time.

With regard to the limits of our research, they mainly reside in the manner of measuring cigarette smoking, in the potential inter-individual differences between our participants and in the fact that the snow-ball sampling technique employed in Study 2 limits the generalization of our results. Self-reports were used in assessing the quitting rates among our participants; future research should employ more objective manners of assessing the smoking status of participants, such as the levels of salivary, urinary or serum cotinine (Gan, Cohen, Man, & Sin, 2008;

Perezstable, Benowitz, & Marin, 1995). Moreover, Volkow et al., 1999, revealed that people with fewer dopamine receptors are more vulnerable to drug abuse as compared to people with more dopamine receptors (Volkow et al., 1999). In order to control for these inter-individual differences, future research should be conducted on larger samples of participants.

References

- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text rev.). Washington, DC: Author.
- Ajzen, I. (1991). Theory of Planned Behavior. *Organizational Behavior and Human Decision Process*, 50(2), 179- 211.
- Armitage, C. J., & Conner, M. (2001). Efficacy of the theory of planned behaviour: A meta-analytic review. *British journal of social psychology*, 40(4), 471-499.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.
- Broms, U., Korhonen, T., & Kaprio, J. (2008). Smoking reduction predicts cessation: longitudinal evidence from the Finnish adult twin cohort. *Nicotine & Tobacco Research*, 10(3), 423-427.
- Brown, R.A., & Lichtenstein, E. (1980, September). Effects of a cognitive-behavioral relapse prevention program for smokers. Paper presented at the annual meeting of the American Psychological Association, Montreal.
- Carboni, E., Silvagni, A., Rolando, M. & DiChiara, G. (1999). Stimulation of dopamine release in the bed nucleus of stria terminalis: a trait of atypical antipsychotics?. *Annals of the New York Academy of Sciences*.
- Connors, G. J., DiClemente, C. C., Velasquez, M. M., & Donovan, D. M. (2012). *Substance abuse treatment and the stages of change: Selecting and planning interventions*. Guilford Press.
- Cosgrove, K. P., Batis, J., Bois, F., Maciejewski, P. K., Esterlis, I., Kloczynski, T., Stiklus, S., Krishnan-Sarin, D., O'Malley, G., Perry, A., Seibyl, C. & Staley, J. K. (2009). {beta} 2-Nicotinic Acetylcholine Receptor Availability During Acute and Prolonged Abstinence From Tobacco Smoking. *Archives of general psychiatry*, 66(6), 666.
- Donatelle, R. J., Prows, S. L., Champeau, D., & Hudson, D. (2000). Randomised controlled trial using social support and financial incentives for high risk pregnant smokers: Significant Other Supporter (SOS) program. *Tobacco control*, 9(suppl 3), iii67-iii69.
- Doubeni, C. A., Reed, G., & DiFranza, J. R. (2010). Early course of nicotine dependence in adolescent smokers. *Pediatrics*, 125(6), 1127-1133.
- Freedman, K. S., Nelson, N. M., & Feldman, L. L. (2012). Smoking initiation among young adults in the United States and Canada, 1998-2010: a systematic review. *Preventing chronic disease*, 9.
- Gan, W. Q., Cohen, S. B. Z., Man, S. P., & Sin, D. D. (2008). Sex-related differences in serum cotinine concentrations in daily cigarette smokers. *Nicotine & tobacco research*, 10(8), 1293-1300.

- Glick, S. D., Maisonneuve, I. M. (1998). Mechanisms of the antiaddictive actions of ibogaine. *Annals of the New York Academy of Sciences*, 844, 214-226.
- Gollwitzer, P. M. (1999). Implementation intentions: Strong effects of simple plans. *American Psychologist*, 54, 493-503.
- Gollwitzer, P. M., & Brandstätter, V. (1997). Implementation intentions and effective goal pursuit. *Journal of personality and social psychology*, 73, 186-199.
- Goode, E. (1999). *Drugs in American Society* (3rd ed.). Boston: McGraw-Hill College.
- Gordon, T., Kannel, W. B., Dawber, T. R., & McGee, D. (1975). Changes associated with quitting cigarette smoking: the Framingham Study. *American heart journal*, 90(3), 322-328.
- Grizzell, J. (2007). *Behavior change theories and models*. Retrieved January, 25, 2008.
- Halikas, J. A. (1997). Craving. In Joyce H. Lowinson, Pedro Ruiz, Robert B. Millman, John G. Langrod (Eds.) *Substance abuse: A comprehensive textbook*. Baltimore: Williams and Wilkins, p. 85-90.
- Jaffe, J. H. (1985) *Drug addiction and drug abuse*. In: Gillman, AG, Goodman, LS, Rail, TW and Murad, F. (eds) *The Pharmacological Basis of Therapeutics*. Macmillan, New York.
- Leventhal, H., Singer, R., & Jones, S. (1965). Effects of fear and specificity of recommendation upon attitudes and behavior. *Journal of Personality and Social Psychology*, 2(1), 20-29.
- Levinthal, C. F. (2002). *Drugs, behavior, and modern society*. Allyn & Bacon.
- Luszczynska, A., & Schwarzer, R. (2003). Planning and self-efficacy in the adoption and maintenance of breast self-examination: A longitudinal study on self-regulatory cognitions. *Psychology and Health*, 18(1), 93-108.
- Mayhew, K. P., Flay, B. R., & Mott, J. A. (2000). Stages in the development of adolescent smoking. *Drug and alcohol dependence*, 59, 61-81.
- Muntele Hendreş, D. (2009). *Starea subiectivă de bine. Consolidarea ei prin acţiuni psihologice*. Editura Universităţii Alexandru Ioan Cuza din Iaşi.
- O'Brien D, Bassett S, McNair P (2013) The effect of action and coping plans on exercise adherence in people with lower limb Osteoarthritis: a feasibility study . *New Zealand Journal of Physiotherapy* 41(2): 49-57.
- Orbell, S., & Sheeran, P. (2000). Motivational and Volitional Processes in Action Initiation: A Field Study of the Role of Implementation Intentions1. *Journal of Applied Social Psychology*, 30(4), 780-797.
- Perezstabile, E. J., Benowitz, N. L., & Marin, G. (1995). Is Serum Cotinine a Better Measure of Cigarette-Smoking Than Self-Report?. *Preventive medicine*, 24(2), 171-179.
- Perry, C. C., Baranowski, T., & Parcel, G. S. (1990). How Individuals, Environments, and Health Behavior Interact: Social Learning Theory. *Health behavior and health education: theory, research, and practice*, 161.
- Prochaska, J., Delucchi, K., & Hall, S. M. (2004). A meta-analysis of smoking cessation interventions with individuals in substance abuse treatment or recovery. *Journal of consulting and clinical psychology*, 72(6).
- Prochaska, J., Johnson, S., & Lee, P. (1998). The transtheoretical model of behavior change. *The Handbook of Health Behavior Change*. New York: Springer Publishing Company.
- Romania Ministry of Health. (2011) : *Global Adult Tobacco Survey*, Ministry of Health Romania, 2011. Retrieved from http://www.ms.gov.ro/documente/Global%20Adult%20Tobacco%20Survey%20Romania%202011_9425_7779.pdf
- Simkin, L. R., & Gross, A. M. (1994). Assessment of coping with high-risk situations for exercise relapse among healthy women. *Health psychology: official journal of the Division of Health Psychology, American Psychological Association*, 13(3), 274.
- Sniehotta, F. F., Schwarzer, R., Scholz, U., & Schüz, B. (2005). Action planning and coping planning for long-term lifestyle change: theory and assessment. *European Journal of Social Psychology*, 35(4), 565-576.
- Sniehotta, F. F., Scholz, U., & Schwarzer, R. (2005). Bridging the intention-behaviour gap: Planning, self-efficacy, and action control in the adoption and maintenance of physical exercise. *Psychology & Health*, 20(2), 143-160.
- Strecher, V; Kreuter, K; Den Boer, D-J; Kobrin, S; Hoppers, M; and Skinner, C (1994). The Effects of Computer-Tailored Smoking Cessation Messages in Family Practice Settings. *The Journal of Family Practice* 39 (3):262-271.
- Tjora, T., Hetland, J., Aarø, L. E., & Øverland, S. (2011). Distal and proximal family predictors of adolescents' smoking initiation and development: a longitudinal latent curve model analysis. *BMC public health*, 11(1), 911.
- Tonstad, V. A. (2006). {published data only} Tonstad S, Tonnesen P, Hajek P, Williams KE, Billing CB, Reeves KR. Effect of maintenance therapy with varenicline on smoking cessation. *JAMA*, 296(1), 64-71.
- Toobert, D. J., Hampson, S. E., & Glasgow, A. R. (2000). The summary of diabetes self-care activities measure: results from 7 studies and a revised scale. *Diabetes care*, 23(7), 943-950.
- Verplanken, B., & Faes, S. (1999). Good intentions, bad habits, and effects of forming implementation intentions on healthy eating. *European Journal of Social Psychology*, 29(5-6), 591-604.
- Volkow N D, Wang, G-J, Fowler JS, Logan J, Gatley SJ, Wong C, Hitzemann RJ, Pappas N (1999a). Reinforcing effects of psychostimulants in humans are associated with increases in brain dopamine and occupancy of D2 receptors. *Journal of Pharmacological Experimental Therapy* 291:409 – 415.
- Zhu, S. H., Sun, J., Billings, S. C., Choi, W. S., & Malarcher, A. (1999). Predictors of smoking cessation in US adolescents. *American journal of preventive medicine*, 16(3), 202-207.

Job search self-efficacy as mediator between employment status and symptoms of anxiety

Andrei Rusu^{a,b}, Diana-Carmen Chiriac^a, Nastasia Sălăgean^a, Ana-Maria Hojbotă^b

^a West University of Timișoara, Romania, ^b "Alexandru Ioan Cuza" University of Iași, Romania

Received 27 September 2013; Accepted 29 November 2013
Available online 6 December 2013

The purpose of this study was to investigate the direct and indirect relationship between unemployment and anxiety symptoms, through job search-self efficacy (JSSE). A total of 30 participants who lost their jobs from the same employing organization were used in this two wave longitudinal study. Participants filled out two questionnaires comprising the Trimodal Anxiety Questionnaire and a Job Search Self-Efficacy subscale at the beginning of the study (T1) and after three months (T2). Results show that participants who were still unemployed three months after being laid off reported higher symptoms of anxiety compared to those who had been reemployed ($\eta^2 = .13$). We also found that participants who were reemployed reported higher levels of JSSE at T2 compared to those who were still unemployed ($\eta^2 = .25$). Moreover, there was a significant negative association between JSSE and anxiety at T1 and at T2. Furthermore, the analysis conducted shows evidence for the mediating role of JSSE in the relationship between employment status and anxiety symptoms. The applied potential of these findings is discussed.

Keywords: unemployment, anxiety, job search self-efficacy, mediation analysis

Address of correspondence: Dr. Andrei Rusu, West University of Timișoara, Department of Psychology, 4 Vasile Pârvan Blvd., room 509, 300223 Timișoara, Timiș County, Romania
Tel/Fax: +40 256 592320, E-mail: andrei_rusul@yahoo.com

Acknowledgements: This work was supported by a grant from the Romanian National Authority for Scientific Research, CNCS – UEFISCDI, project number PN-II-RU-TE-2011-3-0230.

Introduction

The economic crisis generated a shift from long-term employment to more insecure work arrangements, bringing the problem of unemployment in the attention of policy-makers, given the increasing rates, especially for the younger workforce (Gorry, 2013). Also, for some occupations and work fields, either sporadic or prolonged periods of unemployment are normal and expected, especially for self-employed professionals or those working in seasonal activities. Unemployment is a major threat to the health of individuals (Paul & Moser, 2009), being associated with increased levels of distress, depression and anxiety (McKee-Ryan, Song, Wanberg, & Kinicki, 2005; Murphy & Athanasou, 1999; Paul & Moser, 2009). Taking into account the important psychological costs that unemployment has on the victims and their families, it is of great importance to identify the underlying mechanisms of the phenomenon, especially for the design of preventive and remedial interventions (Brown, Cober, Kane, Levy, & Shalhoop, 2006).

The concept of job-search self-efficacy is a domain

specific case of the self-efficacy construct. As Bandura (1977) defined it, self-efficacy refers to one's beliefs in his or her ability to perform a specific task or behavior in order to successfully attain a desired goal. Perceived self-efficacy is a malleable quality that is shaped by relevant experience (e.g., past employment success or failure). Moreover, perceived self-efficacy in managing events from one's life also holds a central role in anxiety-related arousal (Bandura, 1997). Using a two-wave longitudinal design with a sample of thirty recently laid-off individuals, we first tested whether the employment status at three months after being laid off shapes the anxiety symptoms and job search self-efficacy. In addition, we tested the indirect effect of the employment status on the anxiety symptoms, with job search self-efficacy as mediating variable.

Unemployment and mental-health

The problem of mental health represents one of the greatest priorities of our era, especially because of its prevalence that challenges the definitions of normality. Losing a job or failing to find one often results in

psychological stress for the individual and family, translated as feelings of inadequacy, uncertainty and poor health. An increasing number of studies indicate the association between losing a job and mental health, unemployment status generating a vicious cycle of distress (Winefield, 1995). For instance, an aggregate time-series survey revealed increases in levels of suicide, mortality, mental health problems and criminality (Brenner, 1973). Bjorklund (1985) showed that the unemployed had significantly poorer mental health than those who had a job. Several models attempted to delineate the relationship between unemployment and health, some explaining the progression through different stages (Admunson & Borgen, 1982; Hill, 1978), while others focusing either on the deprivation of the benefits of employment, such as satisfying affiliation, identity and material needs (Jahoda, 1981; Warr, 1987), or on changes in identities, status and indirectly on behaviors (Ezzy, 1993). It seems that going through recent unemployment is responsible for depression and anxiety symptoms (Montgomery, Cook, Bartley, & Wadsworth, 1999).

As mental and physical health determines productivity and employability, they are important variables to keep in mind, both as antecedents and consequences of layoff. One of the challenges in this area of research rests in separating the mechanisms through which poor psychological adjustment acts both as predictor (emotional and behavioral problems are likely to lead to inadequate employment) on one hand, and as a consequence of unemployment, on the other. Paul and Moser (2009) conducted a meta-analysis of the relationship between unemployment and mental health and found a medium-size effect ($d = .51$). The practical implications of this effect are important, given that it is equivalent to an increase in the rate of clinical disorders from 16% to 34%. In addition to this, the effect is also reflected on a broad range of indicators, including anxiety ($d = .40$). Moreover, the temporal stability was constant over 30 years (the period covered by the studies included in the analysis).

As for causal relationships, the data revealed by Paul and Moser's (2009) meta-analysis on longitudinal studies suggest a deterioration of mental health following a job loss and an improvement in adjustment indicators after finding a job. The presented conclusions suggest the following hypothesis:

Hypothesis 1: Participants who are still unemployed three months after being laid off will report higher values of anxiety compared to those who were reemployed in the same time period.

Unemployment and job search self-efficacy

The literature that emphasizes the primary role that self-efficacy plays in human motivations, behaviors, and achievement is extensive (Bandura, 1997; Luszczynska & Schwarzer, 2005). As key personal resource in career decision making, self-efficacy refers to individuals' beliefs in their capacity to achieve desired results in their endeavors (Bandura, 1997). Because self-efficacy refers to the way in which people think of their own abilities or confidence regarding performing activities, it is usually seen as a variable that dictates the motivation, the calibrated intensity of action and the commitment that are put in carrying on tasks. The concept is treated either generally, as the persons' beliefs in their ability to face challenges and solve problems in all areas of life (Gist & Mitchell, 1992), or applied to certain areas of activity or

specific skills and tasks. A type of domain-specific belief is job-search self-efficacy (JSSE), which addresses the individual's assessment of his ability to engage in all the actions needed in obtaining a desired job, from writing a resume to finding job openings and performing on interviews (Ellis & Taylor, 1983; Kanfer, & Hulin, 1985; Saks, & Ashforth, 2000).

Most of the studies that focused on JSSE and related variables suggest that the construct is positively associated with frequency of job search behaviors and that behaviors predict job outcomes (Eden & Aviram, 1993; Moynihan, Roehling, Cavanaugh, & Boswell, 2003; Saks & Ashforth, 1999, 2000; Schwab, Rynes, & Aldag, 1987). Kanfer and Hulin (1985) show that individuals who found jobs had higher levels of confidence in their job search strategies and efforts compared to those who were still unemployed one month after being laid off. Moreover, many studies revealed positive relationships between JSSE and either reemployment rates (Caplan, Vinokur, Price, & van Ryn, 1989; Ellis & Taylor, 1983; Kanfer & Hulin, 1985) or the number of job offers received (Ellis & Taylor, 1983; Saks & Ashforth, 2000; Stumpf, Austin, & Hartman, 1984).

According to the perceived self-efficacy theory (Bandura, 1986, 1997), there are four major sources of information employed by individuals in shaping their efficacy beliefs: mastery experience, vicarious experience, verbal persuasion, and physiological feedback. The main source for determining the likelihood of future success rates is past experience and this conclusion should apply to the area of job search skills. Self-efficacy is a malleable quality (Berry & West, 1993; Gist & Mitchell, 1992), increasing after success feedback (Shea & Howell, 2000) and declining after failure appraisals (Gernigon & Delloye, 2003). Based on past success or failures, the individual will shape his or her expectations. More specifically, if a person successfully manages to find a job, the level of trust in their own capacity will be heightened and conversely, if he or she has negative experiences in finding a job, the expectancies regarding achieving these goals in the future are deteriorated.

Hypothesis 2: The occupational status three months after layoff will have a negative impact on the JSSE levels of those who didn't find a job and a positive impact on those who were reemployed, amplifying their JSSE levels.

Job search self-efficacy. A potential mediator between employment status and mental health

As self-efficacy has a central role in self-regulation, perceptions of a lack of ability to influence and modify events from one's life can generate feelings of helplessness and even anxiety (Bandura, 1997). More specifically, the appraisal regarding one's capacity to face future events acts as a buffer against the anxiety that goes with the experience of unemployment. The negative relationship between self-efficacy and affective disturbances has already been documented (Cutrona & Troutman, 1986; Maciejewski, Prigerson, & Mazure, 2000; McFarlane et al., 1995), including at younger people (Ehrenberg, Cox, & Koopman, 1991; Muris, 2002). General self-efficacy was conceptualized as a resource that may facilitate coping with stressful situations (Knoll, Rieckmann, & Schwarzer, 2005; Luszczynska, Gutierrez-Dona, & Schwarzer, 2005; Schwarzer, Boehmer, Luszczynska, Mohamed, & Knoll, 2005).

A more recent study (Zenger, Berth, Brähler, & Stöbel-Richter, 2013) indicated that people who reported lower

levels of self-efficacy had more psychological problems seven years after the first evaluation compared to those who reported an average self-efficacy level. The same study also found differences in the general physical health of the participants, with people who had low self-efficacy levels reporting having gastrointestinal or cardiac problems as well as symptoms of burnout more often than those displaying high self-efficacy levels. These physiological indicators can be seen as a somatization of anxiety, several studies showing that there is a relationship between anxiety and cardiovascular disease (Härter, Conway, & Merikangas, 2003; Kawachi, Sparrow, Vokonas, & Weiss, 1994), gastrointestinal disease (Clouse, 1988; Härter, Conway, & Merikangas, 2003) and migraines (Egger, Angold, & Costello, 1998). However, the literature documenting the relationships between JSSE and mental health is rather scarce, being secondarily explored in studies focusing on negative affect and employment (e.g., Crossley & Stanton, 2005). In the light of these findings, we expect the following:

Hypothesis 3: Self-efficacy in job finding will be negatively associated with anxiety symptoms in both moments.

People face increasingly varied and uncertain employment environments (Smithson & Lewis, 2000) that may affect their adjustment in the absence of protective factors. Such a factor is a positive or optimistic attitude towards the behaviors required for active job finding. A low self-efficacy that results from being unemployed will enhance the worries associated with this employment status, while increased levels of confidence will help the individual experience the situation in less threatening ways, thus reducing anxiety symptoms. Taking into account that the negative experience of unemployment or the positive experience of finding a job can have causal effects on self-efficacy (Bandura, 1997) and mental health (Paul & Moser, 2009), and given the causal relationship between self-efficacy and mental health (Bandura, 1997), we expect the following relationship:

Hypothesis 4: Employment status at three months after layoff will have a direct effect on anxiety and also an indirect one, mediated by JSSE.

Method

Participants and procedure

The participants sample consisted of 30 people (17 females) who were recently laid off by their employing organization. Their mean age was 30.2 years ($SD = 8.55$). Twelve of them were re-employed during the 3 month period in which the study took place, while 18 were still unemployed.

The study had a two-wave longitudinal design. A questionnaire including a consent form, a socio-demographic inventory, and a series of psychological measures (among which a job search self-efficacy scale and an anxiety inventory) were administered at the beginning of the study (right after the participants were laid off - T1) and after 3 months (T2).

Measures

Job Search Self-Efficacy (JSSE) was measured with the 14 items for Job Search Efficacy subscale extracted from the *Career Search Efficacy Scale* (Solberg, Good,

Nord et al., 1994). The subscale comprises examples of job-search specific tasks and activities (e.g., Identify an employer with job opportunities you want.), and participants having to rate their confidence in performing each of them on a 10 point scale (1 - Very little; 10 - Very much). The internal consistency index reached $\alpha = .93$ at T1 and $.96$ at T2.

Anxiety was assessed using the *Trimodal Anxiety Questionnaire* (TAQ, Lehrer and Woolfolk, 1982). The scale contains 36 statements that measure the cognitive, somatic, and behavioral aspects of anxiety using a 9-point scale where 0 is "Never" and 8 is "Extremely Often". Eleven items are designed for measuring cognitive anxiety; 16 items reflect somatic anxiety, referring to one's physiologic symptoms such as chest pain or cramps; the last 9 items are designed for behavioral anxiety and capture social avoidance. For each anxiety dimension, a specific score can be computed, but also a global one expressing generalized anxiety. In the present study we used only the global measure. The internal consistency index on the present sample reached $\alpha = .93$ at T1 and $.95$ at T2.

Analytic strategy

In order to verify the first two hypotheses, we applied the Analysis of Covariance (ANCOVA), so as to control for possible differences at T1 (Vickers, 2005). Hypothesis 3 was tested through correlational analysis, and post-hoc comparisons between coefficients were made based on Raghunathan, Rosenthal, and Rubin's (1996) recommendations for correlated but non-overlapping correlations. In order to examine if job search self-efficacy mediates the indirect relationship between employment status (reemployed vs. unemployed) and anxiety (Hypothesis 4), we used Preacher and Hayes's (2008) framework. Thus, the indirect effect was tested based on a bias-corrected bootstrapping procedure with 5000 samples; a statistically significant indirect effect is signalled only when the bootstrap confidence interval (95% CI) does not include the "0" value.

Results

The employment status as revealed at three months from layoff (i.e., reemployed vs. unemployed) is associated with marginally significant changes in participants' anxiety levels ($F(2, 27) = 3.89, p = .059, \eta^2 = .13$). The participants who found a new job had lower levels of anxiety ($M = 2.37, SD = 1.09$) compared to those who were still unemployed ($M = 3.21, SD = 1.23$). Thus, we can assert that Hypothesis 1 has some statistical support. Figure 1 displays the mean anxiety levels for both groups and measurement moments.

We also found that the employment status (at three months after layoff) had an effect on job search self-efficacy (JSSE), $F(2, 27) = 9.23, p = .005, \eta^2 = .25$. More precisely, participants who found a new job in the three months after they were dismissed reported higher levels of JSSE at T2 ($M = 8.48, SD = 0.91$) compared to those who were still unemployed ($M = 7.13, SD = 1.58$). Figure 1 displays the mean JSSE scores for both groups and measurement moments. The revealed data offers support for our second hypothesis.

Table 1 presents the pattern of correlations found between the studied variables. As the data indicate, there was a significant negative association between JSSE and anxiety at T1 (19% of common variance), and also between the same two variables after 3 months, at T2 (53%

of common variance). Furthermore, the relationship between JSSE and anxiety at T2 is amplified, the difference between the two correlation coefficients (at T1 and at T2) being marginally significant ($z = 1.83$, $p = .067$; two-tailed). The results offer statistical support for our third hypothesis.

The analysis of the indirect effect supports the proposed mediating role of JSSE in the relationship between employment status and anxiety symptoms (Hypothesis 4): $a*b = -0.80$, $SE = 0.25$, 95% CI $[-1.34, -0.33]$. The total effect ($t(28) = -1.92$, $b = -0.84$, $p = .065$) is reduced almost to zero when JSSE is entered in the regression analysis (direct effect), $t(27) = -0.114$, $b = -0.04$, ns. The relationships between the variables and the

corresponding standardized regression estimates for each relation are depicted in Figure 3.

In order to search for further evidence that could support the hypothesized causal direction between the variables, we also conducted a post-hoc crossed-lagged panel correlation analysis. More precisely, we compared the correlation coefficient between JSSE at T1 and anxiety at T2 ($r = -.28$, ns.) with the coefficient between anxiety at T1 and JSSE at T2 ($r = -.18$, ns.). Even though there is a difference between the two estimates in the expected direction, the observed difference is not statistically significant ($z = 0.47$, ns.). Further developments of the present findings will be presented in the Discussion section.

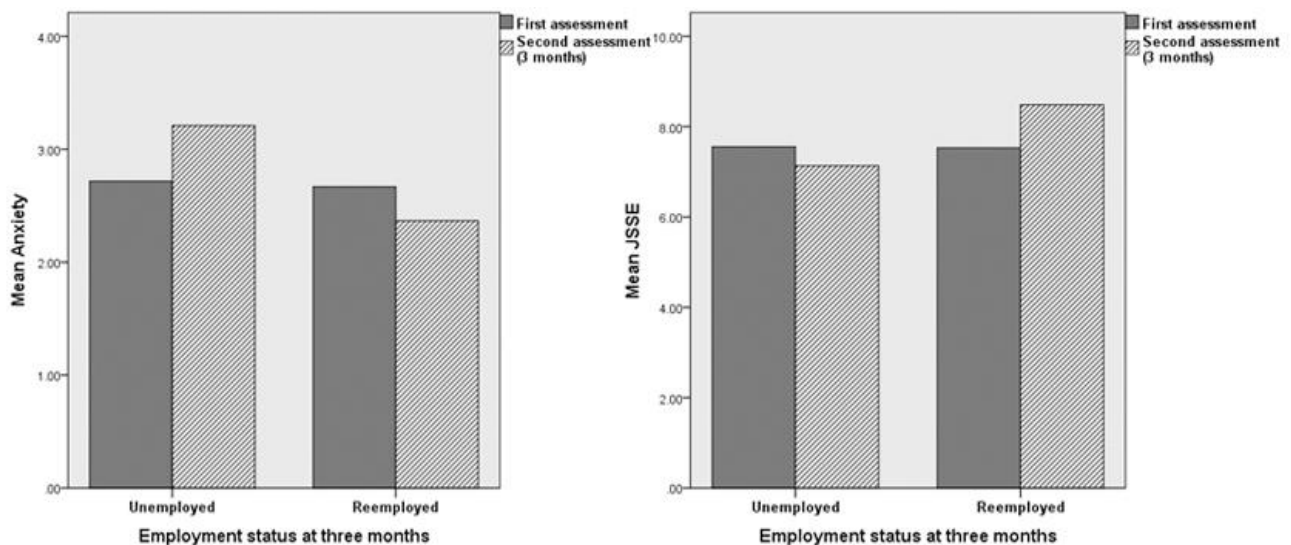


Figure 1. Mean anxiety scores and mean job search self-efficacy scores for the reemployed and unemployed participants at T1 and T2

Table 1. Means, standard deviations and zero-order correlations among study variables, at T1 and T2

Variables	Reemployed (N = 12)		Unemployed (N = 18)		1.	2.	3.
	M	SD	M	SD			
1. JSSE at T1	7.53	1.14	7.55	1.37	1		
2. JSSE at T2	8.48	0.91	7.13	1.58	.43*	1	
3. Anxiety at T1	2.67	1.12	2.72	1.05	-.44*	-.18	1
4. Anxiety at T2	2.37	1.09	3.21	1.23	-.28	-.73**	.35*

JSSE = job search self-efficacy; T1 = measurement moment consecutively after layoff; T2 = second measurement moment (at three months). Higher scores on both measurement instruments are indicative for higher levels of the respective construct. * $p < .05$, ** $p < .01$, two-tailed

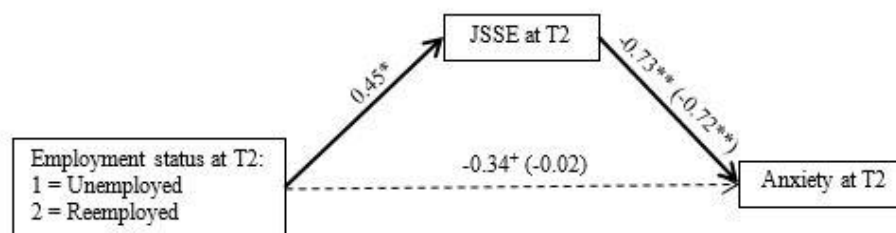


Figure 2. Job search self-efficacy mediates the indirect relationship between employment status and anxiety symptoms. Standardized regression estimates are presented on the relations depicted between the variables. In parenthesis are the multiple regression estimates. + $p < .10$, * $p < .05$, ** $p < .01$

Discussion

The negative effect that unemployment exerts on mental health is well documented (Paul & Moser, 2009). Over time, several theoretical models were developed that explain this relationship (Fryer, 1997; Jahoda, 1981, 1982; Warr, 1987, 2007). These models emphasized the causal link between unemployment and distress, highlighting the psychological needs that we can fill in a satisfactory degree only through employment. Another perspective that explains mental health irregularities is the Social Cognitive Theory of perceived self-efficacy (Bandura, 1977, 1997). One's belief in his capacity to cope with and have control over disturbing thoughts regulates the experienced distress, depression or anxiety arousal in difficult contexts (Bandura, 1994). Unemployment is a difficult and threatening period in one's life because of its potential to magnify symptoms of affective disorders. Perceiving a low sense of efficacy in dealing with unemployment and finding a new job produces anxiety. From this perspective, in the current study we tested the indirect relationship between unemployment (operationalized as employment status at three months after layoff) and anxiety symptoms with the mediating role of job search self-efficacy.

Firstly, starting from Paul and Moser's (2009) meta-analytic results, we predicted that participants who were still unemployed three months after being laid off would report higher symptoms of anxiety compared to those who managed to find a job and who would also manifest lower anxiety levels (direct effect). This hypothesis received partial statistical support, replicating a well-documented pattern through a series of extensive reviews (McKee-Ryan et al., 2005; Murphy & Athanasou, 1999; Paul and Moser, 2009). Thus, the present results are once again highlighting the effect of unemployment on mental health, and more specifically on anxiety symptoms.

We further predicted that the occupational status at three months following layoff will have a negative impact on the JSSE levels of still unemployed participants and will increase reemployed participants' self-efficacy. This hypothesis also received support, the data revealing a significant difference between the two studied groups. More precisely, based on Bandura's (1994, 1997) theory, the positive experience of finding a new job enhanced (also confirmed) one's confidence in his specific self-efficacy, and the setbacks or negative feedback experienced by the still unemployed individuals decreased their self-efficacy beliefs.

Moreover, the correlational analysis revealed significant negative associations between JSSE and anxiety both at T1 and at T2. Also at three months after the first evaluation, the effect size increased from a moderate to a strong association. The negative relationship between self-efficacy and emotional disorders was highlighted in previous other studies (Cutrona & Troutman, 1986; Maciejewski et al., 2000; McFarlane et al., 1995), as well as in studies on younger individuals (Ehrenberg, Cox, & Koopman, 1991; Muris, 2002), but is less explored in the case of unemployed individuals. The only record of this kind that we found was a study conducted by Crossley and Stanton (2005) that found a non-significant relationship between JSSE and anxiety. A possible explanation for the difference between our findings and the aforementioned results could lay in the disparities between the studies' designs. More precisely, even though Crossley and Stanton (2005) also conducted a longitudinal study, they used a sample of students and the first of the two performed

assessments (which included the measures for anxiety and JSSE) was conducted two months before graduation. Thus, both findings could be incorporated and discussed complementary, suggesting that prior to graduation and before starting to actively search for a job, or before being laid off (in the case of experienced individuals), the relationship between JSSE and anxiety symptoms could be inexistent, while during unemployment the two constructs start to relate, a relationship which grows stronger in time. In other words, unemployment could be framed as a threatening situation and a perceived lack of ability to cope with it (i.e., low job search self-efficacy) will lead to anxiety arousal. As long as job search self-efficacy diminishes, due to prolonged unemployment and repeated failures in finding a new job, anxiety symptoms will be more prominent. This statement reflects the predicted indirect effect between employment status and anxiety. The mediating role of JSSE in the relationship between employment status and anxiety received statistical support. These data point out the first evidence of a new possible mechanism (JSSE) between the experience of unemployment and the change in mental health. In an attempt to search for further evidence for the presumed causality, we applied a post-hoc crossed-lagged panel correlation. Even though the association between JSSE measured at T1 and anxiety measured at T2 appeared to be stronger than the association between anxiety at T1 and JSSE at T2, the actual difference was not statistically significant. This result may be due to the low statistical power and thus requires a cautious interpretation.

Even though the results are suggesting causal relations between the variables, the study design impedes stating such conclusions. In order to properly test causal relationships and mechanisms of change, an experimental approach with temporal sequentiality between the variables is needed (for more details see Kazdin, 2007). As such, these findings may be valuable from an applied point of view, suggesting that strengthening one's job search self-efficacy expectations could also consolidate his or her mental health

Limitations

There are also a series of limitations that have to be taken into account. First of all, the study sample consisted only of 30 participants, which leads to a decreased statistical power. At the same time, conducting a similar study on a larger sample is considerably difficult, taking into account that all participants were simultaneously laid off from the same company. Another major limitation is determined by the study's design, which doesn't allow causal conclusions to be formed. Thus, even though the mediation effect is statistically supported by the data this could only lead to causal assumptions and suggestions for further developments.

Conclusion

The theoretical developments from the Social Cognitive Theory of self-efficacy (Bandura, 1977, 1997) offer a comprehensive framework for understanding not only the motivational processes that make one act in a specific manner, but also the self-regulatory mechanisms for affective processes. Few studies explored the relationships between perceived self-efficacy and mental health in the context on unemployment, this relationship being only secondarily explored in studies focusing on negative affect and unemployment (e.g., Crossley &

Stanton, 2005). This study has examined the direct and indirect relationship between unemployment and anxiety symptoms, through job search-self efficacy. The data offer support for the hypothesized indirect effect. The revealed mediation suggests that job search self-efficacy could play an important regulatory role in the relationship between unemployment and experiencing anxiety symptoms. The more confident one is in his ability to overcome employment setbacks and find a new job, the more protected against experiencing anxiety feelings he will be. Even though the study design is not appropriate for asserting causal conclusions the applied potential of our findings is not negligible. Developing intervention programs aimed at amplifying unemployed individuals' job search self-efficacy could also indirectly prevent (or diminish) mental health decline.

References

- Amundson, N. E., Borgen, W. A. (1982). The dynamics of unemployment: Job loss and job search. *Personnel and Guidance Journal*, 60, 562-564.
- Bandura, A. (1977). Self-efficacy: Toward a Unifying Theory of Behavioral Change. *Psychological Review* 84, 191-215.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Bandura, A. (1994). Self-efficacy. In V. S. Ramachandran (Ed.), *Encyclopedia of human behavior* (Vol. 4, pp. 71-81). New York: Academic Press.
- Bandura, A. (1997). *Self efficacy: The exercise of control*. New York: Freeman.
- Berry, J. M., & West, R. L. (1993). Cognitive self-efficacy in relation to personal mastery and goal setting across the life span. *International Journal of Behavioral Development*, 16, 351-379.
- Bjorklund, A. (1985). Unemployment and Mental Health. *Journal of Human Resources*, 20, 469-483.
- Brenner, M. H. (1973). *Mental Illness and the Economy*. Cambridge, MA: Harvard University Press.
- Brown, D. J., Cober, R. T., Kane, K., Levy, P. E., & Shalhoop, J. (2006). Proactive personality and the successful job search: a field investigation with college graduates. *Journal of Applied Psychology*, 91(3), 717-726.
- Caplan, R. D., Vinokur, A. D., Price, R. H., & van Ryn, M. (1989). Job seeking, reemployment, and mental health: A randomized field experiment in coping with job loss. *Journal of Applied Psychology*, 74(5), 759-769.
- Clouse, R.E. (1988). Anxiety and gastrointestinal illness. Special Issue: Biologic systems: Their relationship to anxiety. *Psychiatric Clinics of North America* 11(2), 399-417.
- Cutrona, C. E., & Troutman, B. R. (1986). Social support, infant temperament, and parenting self-efficacy: A mediational model of postpartum depression. *Child development*, 1507-1518.
- Crossley, C. D., & Stanton, J. M. (2005). Negative affect and job search: Further examination of the reverse causation hypothesis. *Journal of Vocational Behavior*, 66, 549-560.
- Eden, D., & Aviram, A. (1993). Self-efficacy training to speed reemployment: Helping people to help themselves. *Journal of Applied Psychology*, 78, 353-360.
- Egger, H. L., Angold, A., & Costellor, E. J. (1998). Headaches and Psychopathology in Children and Adolescents. *Journal of the American Academy of Child & Adolescent Psychiatry*, 37(9), 951-958.
- Ehrenberg, M. F., Cox, D. N., & Koopman, R. F. (1991). The relationship between self-efficacy and depression in adolescents. *Adolescence*, 26(102), 361-374.
- Ellis, R.A., & Taylor, M.S. (1983). Role of self-esteem within the job search process. *Journal of Applied Psychology*, 68, 632-640.
- Ezzy, D. (1993). Unemployment and Mental Health. *Social Science Medicine*, 37, 41-52.
- Fryer, D. (1997). Agency restriction. In N. Nicholson (Ed.), *The Blackwell encyclopedic dictionary of organizational psychology* (p. 12). Oxford, England: Blackwell.
- Gernigon, C., & Delloye, J.B. (2003). Self-efficacy, causal attribution, and track athletic performance following unexpected success or failure among elite sprinters. *Sport Psychologist*, 17, 55-76.
- Gist, M. E., & Mitchell, T.R. (1992). Self-Efficacy: A theoretical analysis of its determinants and malleability. *Academy of Management Review*, 17, 183-211.
- Gorry, A. (2013). Minimum wages and youth unemployment. *European Economic Review*, 64, 57-75.
- Härter, M., Conway, K., & Merikangas, K. (2003). Associations between anxiety disorders and physical illness. *European Archives of Psychiatry And Clinical Neuroscience*, 253(6), 313-320.
- Hill, J. (1978). The Psychological Impact of Unemployment. *New Society*, 43, 118-120.
- Jahoda, M. (1981). Work, employment, and unemployment: Values, theories, and approaches in social research. *American Psychologist*, 36, 184-191.
- Jahoda, M. (1982). *Employment and unemployment*. Cambridge, England: University Press.
- Kanfer, R., & Hulin, C.L. (1985). Individual differences in successful job searches following lay-off. *Personnel Psychology*, 38, 835-847.
- Kawachi, I., Sparrow, D., Vokonas, P.S., & Weiss, S.T. (1994). Symptoms of anxiety and risk of coronary heart disease: the normative aging study. *Circulation*, 10, 2225-2227.
- Kazdin, A. E. (2007). Mediators and mechanisms of change in psychotherapy research. *Annual Review of Clinical Psychology*, 3, 1-27.
- Knoll, N., Rieckmann, N., & Schwarzer, R. (2005). Coping as a mediator between personality and stress outcomes: A longitudinal study with cataract surgery patients. *European Journal of Personality*, 19, 1-19.
- Lehrer, P. M., & Woolfolk, R. L. (1982). Self-report assessment of anxiety: Somatic, cognitive, and behavioral modalities. *Behavioral Assessment*. 4(2), 167-177.
- Luszczynska, A., Gutierrez-Dona, B., & Schwarzer, R. (2005). General self-efficacy in various domains of human functioning: Evidence from five countries. *International Journal of Psychology*, 40(2), 80-89.
- Luszczynska, A., & Schwarzer, R. (2005). Social cognitive theory. In M. Conner & P. Norman (Eds.), *Predicting health behaviour* (2nd ed., pp. 127-169). Buckingham, UK: Open University Press.
- Maciejewski, P. K., Prigerson, H. G., & Mazure, C. M. (2000). Self-efficacy as a mediator between stressful life events and depressive symptoms Differences based on history of prior depression. *The British Journal of*

- Psychiatry*, 176(4), 373-378.
- McFarlane, A. H., Bellissimo, A., & Norman, G. R. (1995). The Role of Family and Peers in Social Self - Efficacy. *American Journal of Orthopsychiatry*, 65(3), 402-410.
- McKee-Ryan, F. M., Song, Z., Wanberg, C. R., & Kinicki, A. J. (2005). Psychological and physical well-being during unemployment: A meta-analytic study. *Journal of Applied Psychology*, 90, 53-76.
- Montgomery, S. M., Cook, D. G., Bartley, M. J., & Wadsworth, M. E. (1999). Unemployment pre-dates symptoms of depression and anxiety resulting in medical consultation in young men. *International Journal of Epidemiology*, 28(1), 95-100.
- Moynihhan, L., Roehling, M.V., Cavanaugh, W., & Boswell, W. (2003). A longitudinal study of the relationships among job search self-efficacy, job interviews, and employment outcomes. *Journal of Business and Psychology*, 18, 207-233.
- Murphy, G. C., & Athanasou, J. A. (1999). The effect of unemployment on mental health. *Journal of Occupational and Organizational Psychology*, 72, 83-99.
- Muris, P. (2002). Relationships between self-efficacy and symptoms of anxiety disorders and depression in a normal adolescent sample. *Personality and Individual Differences*, 32(2), 337-348.
- Paul, K. I., & Moser, K. (2009). Incongruence as an explanation for the negative mental health effects of unemployment: Meta-analytic evidence. *Journal of Occupational and Organizational Psychology*, 79, 595-621.
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior research methods*, 40(3), 879-891.
- Raghunathan, T. E., Rosenthal, R., & Rubin, D. B. (1996). Comparing correlated but nonoverlapping correlations. *Psychological Methods*, 1(2), 178.
- Saks, A. M., & Ashforth, B. E. (1999). Effects of individual differences and job search behaviors on the employment status of recent university graduates. *Journal of Vocational Behavior*, 54, 335-349.
- Saks, A.M., & Ashforth, B.E. (2000). Change in job search behavior and employment outcomes. *Journal of Vocational Behavior*, 56, 277-287.
- Schwab, D.P., Rynes, S.L., & Aldag, R.A. (1987). Theories and research on job search and choice. In K. Rowland and G. Ferris (Eds.), *Research in Personnel and Human Resource Management* (Vol. 5, pp. 129-166). Greenwich, CT: JAI Press.
- Schwarzer, R., Boehmer, S., Luszczynska, A., Mohamed, N. E., & Knoll, N. (2005). Dispositional self-efficacy as a personal resource factor in coping after surgery. *Personality and Individual Differences*, 39, 807-818.
- Shea, C.M., & Howell, J.M. (2000). Efficacy-performance spirals: An empirical test. *Journal of Management*, 26(4), 791-812.
- Smithson, J., & Lewis, S. (2000). Is job insecurity changing the psychological contract? *Personnel Review*, 29, 680-702.
- Solberg, V. S., Good, E. G., Nord, D., Holm, C., Hohner, R., & Zima, N. Malen, A.(1994). Assessing career search expectations: Development of the Career Search Efficacy Scale. *Journal of Career Assessment*, 2, 111-123.
- Strumpf, S.A., Austin, E.J., & Hartman, K. (1984). The impact of career exploration and interview readiness on interview performance and outcomes. *Journal of Vocational Behavior*, 24, 221-235.
- Vickers, A. J. (2005). Parametric versus non-parametric statistics in the analysis of randomized trials with non-normally distributed data. *BMC Medical Research Methodology*, 5(1), 35
- Warr, P. B. (1987). *Work, unemployment and mental health*. Oxford, England: Clarendon Press.
- Warr, P. B. (2007). *Work, happiness, and unhappiness*. Mahwah, NJ: Lawrence Erlbaum.
- Winefield, A.H. (1995). Unemployment: Its psychological costs. In C.L. Cooper & I.T. Robertson (Eds.), *International review of industrial and organizational psychology*, Vol. 10 (Chapter 5, pp. 169-212). London: Wiley.
- Zenger, M., Berth, H., Brähler, E., & Stöbel-Richter, Y. (2013). Health complaints and unemployment: The role of self-efficacy in a prospective cohort study. *Journal of Social and Clinical Psychology*, 32(1), 97-115.