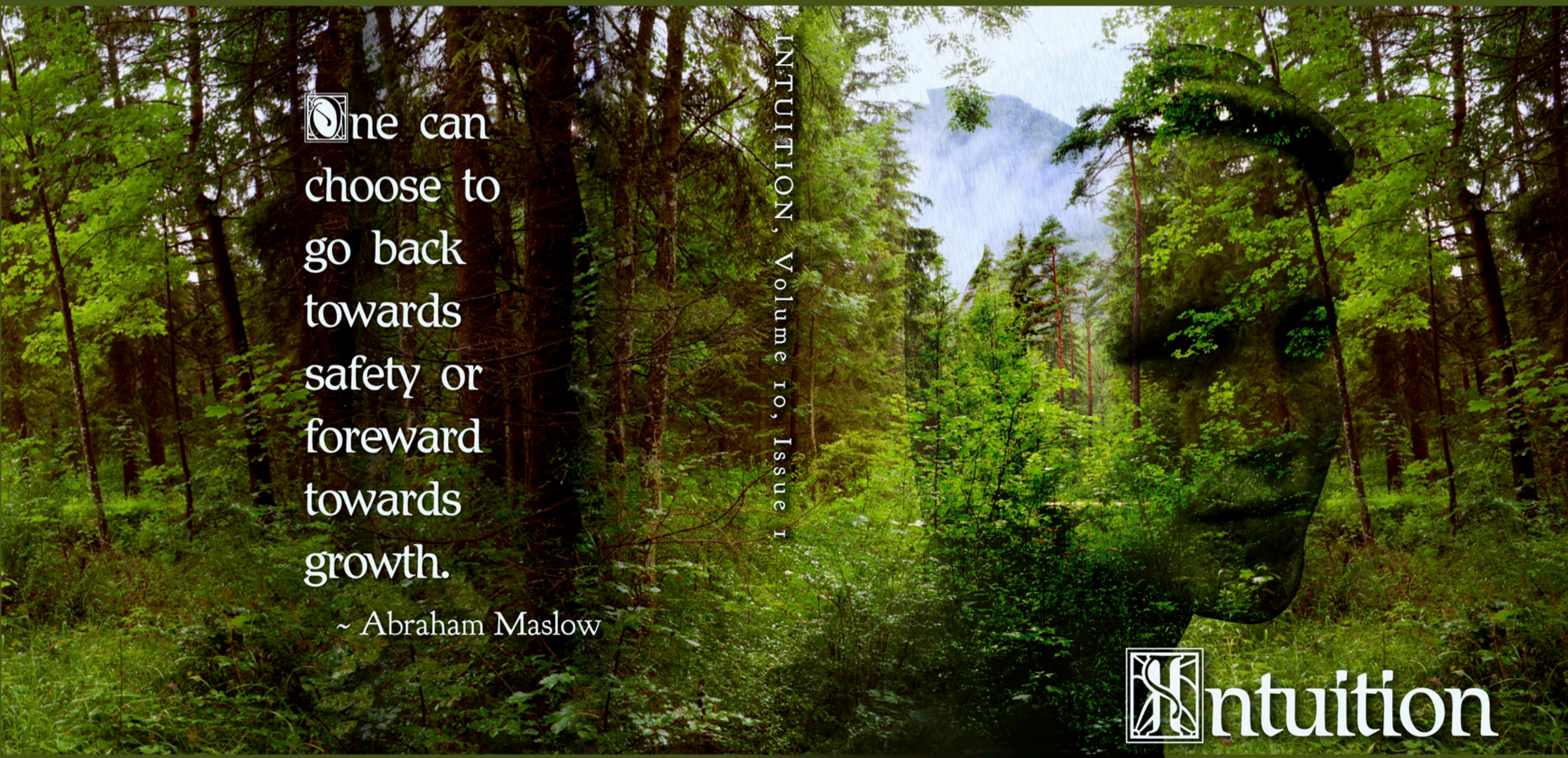
Intuition: The BYU Undergraduate Journal of Psychology

Volume 10 | Issue 1 Article 11

2015

10.1



Intuition

Volume 10, Issue 1

Volume 10, Issue 1

Journal of Undergraduate Psychology
Brigham Young University

Intuition Staff

Intuition is published semi-annually by the Brigham Young University Psychology Department. *Intuition* is managed, edited, and designed by undergraduate students enrolled at Brigham Young University. Individuals who are interested in joining the staff are encouraged to contact the Editor-in-Chief at byupsychjournal@gmail.com.

Intuition would especially like to thank Dr. Harold Miller for his guidance in developing Issue 10. The efforts of the Psychology Department faculty members who generously provided reviews are likewise appreciated.

Contents

Later-life Hoarders

Clinical Symptomatic Progression and Multi-Faceted Clinical Interventions

by Marie C. Ricks

The age at onset and the clinical symptomatic progression of hoarding behaviors through successive decades are important factors in concerting appropriate interventions for later-life hoarders. The onset of hoarding begins at an early age, progresses in severity with each season of life, and has serious personal and social consequences. If left unimpeded, hoarders' lives often become sufficiently maladjusted to require professional interventions, which should be multi-faceted to relieve symptoms more successfully and resolve underlying emotional issues for later-life hoarders. Multi-faceted interventions may play a key role in countering chronic hoarding behaviors and related personal dysfunction in older individuals.

Typically, chronic hoarding behaviors are difficult to treat successfully because most current interventions are initiated (a) after hoarding behaviors are deeply entrenched and (b) after the magnitude of clutter has become overwhelming. Although many scholars have examined hoarding behaviors and potential interventions, few have examined the implications of age at onset and clinical symptomatic progression, particularly with the goal of defining appropriate interventions for older hoarders (Ayers, Saxena, Golshan, & Wetherell, 2010). Multi-faceted interventions for later-life hoarders, as discussed later in this paper, may play a key role in countering dysfunctional habits and chronic hoarding behaviors (Tolin, Meunier, Frost, & Steketee, 2010). In this review article, I begin by defining hoarding. I will then focus on the age at onset of hoarding behaviors and on the progression and consequences of hoarding patterns through successive decades. Finally, I will propose viable, multi-faceted interventions that could successfully relieve symptoms and address underlying emotional issues for later-life hoarders.

Definition

Hoarding has been defined traditionally in terms of four observable aspects: excessive accumulation, collecting, lack of capacity to discard, and pathological attachment to material objects (Frost & Gross, 1993). As this malady has become better understood, the definition of hoarding has been broadened to include the core symptoms of excessive acquisition, urges to save, difficulty discarding, and accumulation of clutter, as well as the personality traits of indecisiveness, perfectionism, procrastination, disorganization, and avoidance (Steketee & Frost, 2003). Hoarding behaviors and the related personality traits result in clutter sufficient to disrupt hoarders' lives and to cause potential health and safety issues. Over time, hoarding behaviors may become chronic,

and later-life hoarders eventually amass an accumulation of items and exhibit personal dysfunction requiring professional intervention.

Clinical Symptomatic Progression

Hoarding tends to be progressive and persistent, with initial hoarding symptoms beginning during childhood (Ayers, Wetherell, Golshan, & Saxena, 2011) and definitive hoarding behaviors starting between the ages of 11 and 14 (Tolin et al., 2010). Hoarding behaviors show mild levels during middle adolescence (Grisham, Frost, Steketee, Kim, & Hood, 2006), become moderately entrenched in early-to-mid 20s (Tolin et al., 2010), and reach relentless levels starting in the mid-thirties (Ayers et al., 2011). Severe symptoms become prominent after the age of 40 (Tolin et al., 2010).

Hoarding behaviors can be divided into four categories: logical, irrational, compulsive, and pathological. Each category manifests progressive symptomatic dysfunction. Examining the dynamics and consequences of each category may help to explain the mentality and habits of those who hoard.

Logical hoarding has its basis in need. The "pack rat" collects and saves for several reasons, including the intent to share in response to economic deprivation or governmental transitions that require a pragmatic insurance against scarcity or to gain the reciprocal advantage of bartering—all of which may result in positive emotional experiences and economic savings (Maycroft, 2009). This rational hoarding may be useful during particular intervals and then be discontinued when circumstances change. Hoarding generally stops unless the logical hoarder's habits are practiced and emotionally comforting, in which case personal spending capacity will tend to entrench these behaviors.

Hoarding behaviors are favored in a wealthy society, especially when one's capacity to purchase increases and material goods are in abundance (Shankar & Fitchett, 2002). These conditions may lead

logical hoarders to irrational hoarding habits. As goods accumulate and begin to cause chaos, irrational hoarders begin to reposition them in order to make room for more without the attendant activities of discarding, recycling, or sharing (Maycroft, 2009). Nor do irrational hoarders dispose of items that age, break, or become less useful. Instead, they tend to mask their now-irrational acquisitiveness; and in the process, may become emotionally overwhelmed.

As irrational hoarding behaviors become deep-rooted, personal dysfunction begins to set in because of the magnitude of the messes that result from the hoarder's gathering practices and failure to discard. Hoarders often become compulsive. They frequently leave their clutter temporarily to seek relief from the internal conflict it causes them. Sadly, they may acquire more goods while away from their hoard and thus add to it upon their return (Maycroft, 2009).

Researchers also have found that hoarders avoid the anxiety of decision-making, even as possessions attain a comforting quality (Grisham et al., 2006). Hoarders often report that discarding possessions is akin to losing a loved one (Kyrios, Frost, & Steketee, 2004). This distorted view may provide a reassurance of safety (Koretz & Guthiel, 2009), especially if the hoarder lacks alternative attachments. Clearly, compulsive hoarding can also be socially isolating (Maycroft, 2009).

Social Consequences of Hoarding

Hoarding has far-reaching social consequences. A surprising number of U.S. citizens are classifiable as chronic hoarders, with estimates ranging between two and five percent of the general population (Ayers et al., 2011; Samuels et al., 2008) or upwards of about 1.8 million people (Tolin, Frost, Steketee, Gray, & Fitch, 2008). This number likely is a serious underestimate because chronic hoarding is usually not reported unless in conjunction with a mental disorder or a

public health or safety hazard (Tolin et al., 2008) The large number of hoarders results in unsanitary living conditions, increased fire hazards, and the compromised health and safety of both hoarders and those living nearby (Tolin et al., 2008). Hoarding can also interfere with the hoarder's work, social interactions, eating, and sleeping (Grisham et al., 2006). These consequences underscore the severe social implications and costs of hoarding.

Later-life Hoarders

Hoarding is more prevalent in older people and specifically more likely to occur in females who are fully mobile with relatively few health and functional disabilities, which tend towards agitated behaviors (Marx & Cohen-Mansfield, 2003). Some older, chronic hoarders have received some kind of psychiatric treatment in their lifetime, but most have never requested nor received treatment specifically for hoarding (Ayers et al., 2010). Even when intervention is indicated, the hoarder repeatedly rejects or sidesteps it unless pressured by family, social services, or public health officials (Tolin et al., 2008). Some accept treatment only under threat of divorce, separation, family breakup, or eviction (Christensen & Greist, 2001). In treatment, later-life hoarders exhibit low or fluctuating levels of motivation (Tolin et al., 2008). Rates of premature exit from treatment are between 14 and 30% (Steketee, Frost, Tolin, Rasmussen, & Brown, 2010).

Multi-faceted Professional Intervention

Professionals have sought to treat later-life hoarding using a number of interventions, including cognitive-behavioral therapy (CBT), cognitive-behavioral group therapy (CBGT), and biblio-based therapies.

Cognitive behavioral therapy is a traditional intervention for hoarding that typically involves home visits and last from 7 to 19

months. It includes "building insight, increasing motivation, problem-solving training, and focuses on organizational skill building, cognitive restructuring, decision making and exposure to acquiring and discarding" (Ayers et al., 2011, p. 689). Treatment effectiveness is mixed because of the chronic, progressive nature of hoarding over a longer lifetime (Ayers et al., 2011). In a recent study, older adults who received 26 sessions of CBT and were followed up with after six months did not respond well (Ayers et al., 2011). That is, only 14 to 20% of the participants were classified as responding to treatment, and these gains were not maintained at the six-month follow-up. Although no participants dropped out, homework compliance (meaning both reducing their accumulated collection and reducing hoarding habits) was not consistent (Ayers et al., 2011). Because these findings substantiated that CBT did not produce clinically meaningful change in older adults, Ayers et al. (2011) suggested that a different behavior-treatment protocol be implemented, specifically one that de-emphasized cognitive restructuring and focused on specific, concrete between-session assignments.

Cognitive behavioral group therapy is an alternative to CBT that involves groups meeting together for about 12 weekly two-hour sessions. In CBGT, a therapist describes commonly-held dysfunctional beliefs and provides exercises and assignments for cognitive restructuring (Meyer et al., 2010). CBGT has been shown to improve the success rate from 10 to 21% over CBT (Muroff, Steketee, Himle, & Frost, 2010), possibly because CBGT reduces social isolation and stigma (Muroff et al., 2009).

Another treatment for hoarding is biblio-based therapy, a multi-session support group that is action oriented and not facilitated by a professional, which reduces time commitment and expense, as compared to CBT or CBGT. According to Frost, Pekareva-

Kochergina, and Maxner (2011), these "nonprofessional interventions may provide a cost-effective pre-treatment, adjunct, or alternative for individuals who want to work on hoarding problems but are unable or unwilling to engage in [psychological] treatment" (p. 628). Participants are able to develop and maintain motivation in a casual group setting without homework assignments. Additionally, as they become comfortable within the group, they may challenge their fellow group members' maladaptive beliefs and behaviors more knowingly and productively. Informal social encounters during biblio-based therapy appear to effectively restructure beliefs (Frost et al., 2011) and promote successful behavioral modification.

In a study by Frost et al. (2011), biblio-based therapy outcomes had large effect sizes for the relatively short intervention period and did not involve costly fees, trained clinicians, and home visits (traditional elements of CBT and CBGT). Symptoms were reduced 23 to 28%, with 61% of participants considering themselves much or very much improved. This type of therapy also showed significant reduction of the core hoarding symptoms (clutter, difficulty discarding, and compulsive acquisition), life interference due to hoarding, and hoarding beliefs (Frost et al., 2011).

A promising follow-up intervention is the inclusion of booster sessions after informal or formal therapy has terminated. These post-treatment sessions may be held periodically with group members to re-enforce principles taught during earlier treatment sessions. Barlow (2000) found that 82% of patients, once they had formed new, healthier habits, continued them for a minimum of one year with the help of pre-scheduled booster sessions.

Later-life hoarders have special challenges during therapy, including difficulty completing homework, finding alternatives to acquisition, reducing accumulation, and reshaping their discarding habits. Later-

life hoarders well may benefit from a combination of CBGT, biblio-based therapy, and follow-up booster sessions. This multi-faceted combination of treatments might decrease cognitive dysfunction through CBGT, increase social accountability through biblio-based therapy, and encourage continued compliance through booster sessions. Ayers, Wetherell, Golshan, and Saxena (2011) aptly argued that "it is necessary to know when standard treatments do not work well for subgroups, such as older adults, so treatments may be refined" (p. 692).

Future Research

In addition to addressing the intervention needs of later-life hoarders, other possibilities for future research might be explored. The delayed recognition and diagnosis of hoarding problems by professionals demonstrate a "need for earlier identification and intervention before the hoarding problem reaches a severe level that is difficult to treat because of the sheer magnitude of the clutter" (Grisham et al., 2006, p. 683). Establishing a "treatment classification or staging system … is an important next step for hoarding outcome research" (Ayers et al., 2011, p. 692) because it will improve researchers' capacity to communicate effectively about later-life hoarding behaviors. Identifying and educating potential hoarders at an earlier age could reduce the lengthy and intensive course of treatment necessary after hoarding symptoms have become entrenched (Ayers et al., 2010; Tolin et al., 2010). New research could be focused on identifying and educating earlier-life hoarders with the hope to displace entrenched hoarding behaviors and later-life hoarding dysfunction.

References

Ayers, C. R., Saxena, S., Golshan, S., & Wetherell, J. L. (2010). Age at onset and clinical features of late life compulsive hoarding. *International Journal of Geriatric Psychiatry*, 25, 142–149.

Ayers, C. R., Wetherell, J. L., Golshan, S., & Saxena, S. (2011). Cognitive-behavioral therapy for geriatric compulsive hoarding. *Behavior Research and Therapy*, 49, 689–694.

Barlow, D. H. (2000). Unraveling the mysteries of anxiety and its disorders from the perspective of emotional theory. *American Psychologist*, 55, 1245–1263.

Christensen, D. D., & Greist, J. H. (2001). The challenge of obsessive-compulsive disorder hoarding. *Primary Psychiatry*, 8, 79–86.

Frost, R. O., & Gross, R. C. (1993). The hoarding of possessions. *Behavior Research and Therapy*, 31, 267–381.

Frost, R. O., Pekareva-Kochergina, A., & Maxner, S. (2011). The effectiveness of a biblio-based support group for hoarding disorder. *Behavior Research and Therapy*, 49, 628–634.

Grisham, J. R., Frost, R. O., Steketee, G., Kim, H. J., & Hood, S. (2006). Age of onset of compulsive hoarding. *Anxiety Disorders*, 20, 675–686.

Koretz, J., & Guthiel, T. G. (2009). 'I can't let anything go': A case study with psychological testing of a patient with pathologic hoarding. *American Journal of Psychotherapy*, 63, 257–266.

Kyrios, M., Frost, R. O., & Steketee, G. (2004). Cognitions in compulsive buying and acquisition. *Cognitive Therapy and Research*, 28, 241–258.

Marx, M. S. & Cohen-Mansfield, J. (2003). Hoarding behavior in the elderly: A comparison between community-dwelling persons and nursing home residents. *International Psychogeriatrics*, 15, 289–306.

Maycroft, N. (2009). Not moving things along: Hoarding, clutter and other ambiguous matter. *Journal of Consumer Behavior*, 8, 354–364.

Meyer, E., Shavitt, R. G., Leukefeld, C., Heldt, E., Souza, F. P., Knapp, P., & Cordioli, A. V. (2010). Adding motivational interviewing and thought mapping to cognitive-behavioral group therapy: Results from a randomized clinical trial. *Revista Brasileira de Psiquiatria*, 32, 20–29.

Muroff, J., Steketee, G., Himle, J., & Frost, R. O. (2010). Delivery of internet treatment for compulsive hoarding (DITCH). *Behavior Research and Therapy*, 48, 79–85.

Muroff, J., Steketee, G., Rasmussen, J., Gibson, A., Bratiotis, C., & Sorrentino, C. (2009). Group cognitive and behavioral treatment for compulsive hoarding: A preliminary trial. *Depression and Anxiety*, 26, 634–640.

Samuels, J. F., Bienvenu, O. J., Grados, M. A., Cullen, B., Riddle, M. A., Liang, K., … Nestadt, G. (2008). Prevalence and correlates of hoarding behavior in a community-based sample. *Behavior Research and Therapy*, 46, 836–844.

Shankar, A., & Fitchett, J. A. (2002). Having, being and consumption. *Journal of Marketing Management*, 18, 501–516.

Steketee, G., & Frost, R. O. (2003). Compulsive hoarding: Current status of the research. *Clinical Psychology Review*, 23, 905–927.

Steketee, G., Frost, R. O., Tolin, D. F., Rasmussen, J., & Brown, T. A. (2010). Waitlist-controlled trial of cognitive behavior therapy for hoarding disorder. *Depression and Anxiety*, 27, 476–484.

Tolin, D. F., Frost, R. O., Steketee, G., Gray, K. D., & Fitch, K. E. (2008). The economic and social burden of compulsive hoarding. *Psychiatric Research*, 160, 200–211.

Tolin, D. F., Meunier, S. A., Frost, R. O., & Steketee, G. (2010). Course of compulsive hoarding and its relationship to life events. *Depression and Anxiety*, 27, 829–838.

Exercise, Brain Plasticity, and Brain-derived Neurotrophic Factors

by Kyle R. Hill

Physical exercise influences neurobiological processes and cognitive abilities. For example, it increases the expression of brain-derived neurotrophic factor (BDNF), a protein responsible for maintaining synaptic connections as well as neuronal development, growth, and survival. The increase of BDNF promotes brain plasticity and has been shown to aid recovery from brain injuries, as well as to improve cognitive function in older adults. Recent studies with well-exercised rats showed strong, positive correlations between BDNF levels, cognitive performance in maze tasks, and recovery from fluid-percussion injuries to the hippocampus. Currently researchers are focusing on whether exercise prevents neurodegenerative diseases such as Alzheimer's and Parkinson's.

It is commonly known that exercise benefits physiological health, such as decreased risk of obesity, diabetes, heart disease, and cancer (Bouchard, Shephard, & Stephens, 1994). Recently, research has demonstrated neurobiological effects of exercise and a wide range of benefits to cognitive and emotional health, including improved long- and short-term memory and learning (Bekinschtein et al., 2008; Liu et al., 2009), remission of the symptoms of depression (Lawlor & Hopker, 2001), improved executive-control processes (Colcombe & Kramer, 2003), increased cognitive function in elderly persons with dementia (Laurin, Verreault, Lindsay, MacPherson, & Rockwood, 2009), and remission of the symptoms of Parkinson's disease (Smith & Zigmond, 2003). These benefits are related to the effects of exercise on brain-growth factors, specifically, brain-derived neurotrophic factor (BDNF; Dishman et al., 2006). BDNF promotes neuronal growth and regulation, and synaptic function, all of which affect brain plasticity (Huang & Reichardt, 2001). Brain plasticity is essential for cognitive abilities, especially after middle age, when the risk of Alzheimer's disease and dementia increases (Cotman & Berchtold, 2002). Human and nonhuman research on the relationship between exercise, BDNF, and brain plasticity has implications for the preventive treatment of individuals at risk for neurodegenerative diseases, as well for the maintenance of cognitive ability across the lifespan (Colcombe & Kramer, 2003; Laurin et al., 2009). This review will examine the role of BDNF in promoting brain plasticity, the role of exercise in the upregulation of BDNF, and the implications of these roles for improving learning, memory, and executive processes in older adults.

BDNF and Neuroplasticity

BDNF is part of a family of proteins called neurotrophins (NT), which regulate cell death, facilitate neuronal development, and modify

synaptic transmission and connectivity (Huang & Reichardt, 2001; Schinder & Poo, 2000). Though NTs are primarily active during embryonic development (Thoenen, 1995), they, and especially BDNF, also operate in adult brain structures (Liu et al., 2009).

BDNF is released from both presynaptic and postsynaptic sites and binds with tropomyocin-receptor-kinase (Trk) receptors. In mammals, Trk receptors are vital for normal cell function and are the central receptors for BDNF (Huang, & Reichardt, 2003). On a presynaptic level, the binding of BDNF facilitates the release of neurotransmitters, particularly glutamate. On a postsynaptic level, the binding of BDNF leads to activation of N-methyl-D-aspartate (NMDA) receptors (Yamada, Mizuno, & Nabeshima, 2002), which are glutamate receptors and the primary receptors involved in long-term potentiation (LTP). As neuronal activity is repeated, the action of BDNF is enhanced in the synapse, which enahnces synaptic transmission and connectivity (Schinder & Poo, 2000). Thus BDNF plays a notable role in brain plasticity.

Brain plasticity refers to the brain's capability to be modified through repeated neuronal activity. It is supported by the action of BDNF (Bekinschtein et al., 2008; Smith, & Zigmond, 2003). The neurotrophin hypothesis of synaptic plasticity (Schinder & Poo, 2000) asserts that exercise increases the expression of BDNF, thereby promoting brain plasticity.

Exercise Promotes BDNF Expression

Exercise leads to the upregulation (increase in expression) of BDNF. The first study to demonstrate that exercise can increase BDNF expression measured levels of BDNF in rat brains following 0 (control), 2, 4, or 7 nights of access to a running wheel (Neeper, Góauctemez-pinilla, Choi, & Cotman 1995). To determine the degree to which running increased BDNF levels, they compared the total distance run

by individual rats with their BDNF levels. There was a significant positive correlation between the two variables (2 nights, r = .967; 4 nights, r = .95; 7 nights, r = .89)

A similar study by Griesbach, Hovda, Molteni, Wu, and Gómez-pinilla (2004) measured BDNF levels in rats and compared the functional recovery of brain-injured rats that exercised (wheel-running) to that of rats that did not exercise. One group received a lateral fluid-percussion injury (FPI) to the hippocampus, replicating a traumatic brain injury. A second group received a sham injury. Subgroups were divided by acute exercise (0-6 days), delayed exercise (14-20 days), and no exercise following injury. All groups also were exposed to water-maze training. BDNF levels were assessed on day 7 or day 21. Rats in the delayed-exercise group had higher levels of BDNF than those in the acute-exercise group and the no-exercise group. BDNF levels positively correlated with the amount of exercise. Rats that received FPI and were in the delayed-exercise group performed significantly better in the water maze compared to FPI rats that didn't exercise. These findings suggest that exercise promotes upregulation of BDNF. However, because the acute-exercise group did not exhibit results similar to those observed in the delayed-exercise group, the study also implies there is latency to BDNF upregulation following traumatic brain injury.

Learning, Memory, and Executive Processes

Animal models have been applied to exercise-related cognitive improvements in humans and the neurobiological etiology of cognitive decline in aged adults (Colcombe & Kramer, 2003; Dishman et al., 2006). Exercise increases BDNF upregulation in older adults and improves learning, memory, and executive functions. A meta-analysis by Colcombe and Kramer (2003) showed that processing speed, visuospatiality, working memory, and executive control increased an

average of 0.5 standard deviations in physically-active or exercised older adults compared to sedentary adults.

One theory of the cognitive benefits of exercise involves LTP in the hippocampus (Van Praag, Kempermann, & Gage, 1999). The hippocampus is predominantly involved with encoding new memories. As already mentioned, BDNF facilitates the release and binding of glutamate, which is the primary neurotransmitter involved in hippocampal LTP (Yamada et al., 2002). Furthermore, long-term memory and learning improve with exercise (Colcombe & Kramer, 2003; Cotman & Berchtold, 2002; Dishman et al., 2006; Van Praag, Christie, Sejnowski, & Gage, 1999), with implications for future research on the treatment of neurodegenerative diseases such as dementia and Alzheimer's.

Conclusion

Exercising can be beneficial for physical and mental health. Exercise leads to the upregulation of BDNF, which promotes cognitive benefits, such as improved learning, memory, and executive processes. In adults, BDNF enhances LTP in the hippocampus. Future research with humans may reveal how exercise can become preventive for neurodegenerative diseases such as Alzheimer's.

References

Bekinschtein, P., Cammarota, M., Katche, C., Slipczuk, L., Rossato, J. I., Goldin, A., . . . Medina, J. H. (2008). BDNF is essential to promote persistence of long-term memory storage. *Proceedings of the National Academy of Sciences of the United States of America*, 105, 2711. doi:10.1073/pnas.0711863105

Bouchard, C., Shephard, R. J., & Stephens T. (1994). *Physical Activity, Fitness, and Health: International Proceedings and Consensus Statement Human Kinetics.* Champaign, IL.

Colcombe, S., & Kramer, A. F. (2003). Fitness effects on the cognitive function of older adults: A meta-analytic study. *Psychological Science*, 14, 125. doi:10.1111/1467-9280.t01-1-01430

Cotman, C. W., & Berchtold, N. C. (2002). Exercise: A behavioral intervention to enhance brain health and plasticity. *Trends in Neurosciences*, 25, 295-301. doi:10.1016/S0166-2236(02)02143-4

Dishman, R., Berthoud, H. R., Booth, F. W., Cotman, C.W., Edgerton, V., Fleshner, M. R., . . . Zigmond, M. J. (2006) Neurobiology of exercise. *Obesity*, 14, 345. doi:10.1038/oby.2006.46

Griesbach, G. S., Hovda, D. A., Molteni, R., Wu, A., & Gómez-pinilla, F. (2004). Voluntary exercise following traumatic brain injury: Brain-derived neurotrophic factor upregulation and recovery of function. *Neuroscience,* 125, 129.

Huang, E. J., & Reichardt, L. F. (2001). Neurotrophins: Roles in neuronal development and function. *Annual Review of Neuroscience*, 24, 677.

Huang, E. J., & Reichardt, L. F. (2003). Trk receptors: Roles in neuronal signal transduction. *Annual Review of Biochemistry*, 72, 609.

Laurin, D., Verreault, R., Lindsay, J., Macpherson, K., & Rockwood, K. (2001). Physical activity and risk of cognitive impairment and dementia in elderly persons. *Archives of Neurology*, 58, 498. doi:10.1001/archneur.58.3.498

Lawlor, D. A., & Hopker, S. W. (2001). The effectiveness of exercise as an intervention in the management of depression: Systematic review and meta-regression analysis of randomised controlled trials. *BMJ: British Medical Journal*, 322, 763-767. doi:10.1136/bmj.322.7289.763

Liu, Y., Chen, H., Wu, C., Kuo, Y., Yu, L., Huang, A., . . . Jen, C. (2009). Differential effects of treadmill running and wheel running on spatial or aversive learning and memory: Roles of amygdalar brain-derived neurotrophic factor and synaptotagmin. *International Journal of Psychology-London*, 587, 3221-3231. doi:10.1113/jphysiol.2009.173088

Neeper, S. A., Gómez-pinilla, F., Choi, J., & Cotman, C. (1995). Exercise and brain neurotrophins. *Nature*, 373, 109.

Schinder, A. F., & Poo, M. (2000). The neurotrophin hypothesis for synaptic plasticity. *Trends in Neurosciences*, 23, 639-645.

Smith, A. D., & Zigmond, M. J. (2003). Can the brain be protected through exercise? Lessons from an animal model of parkinsonism. *Experimental Neurology*, 184, 31-39.

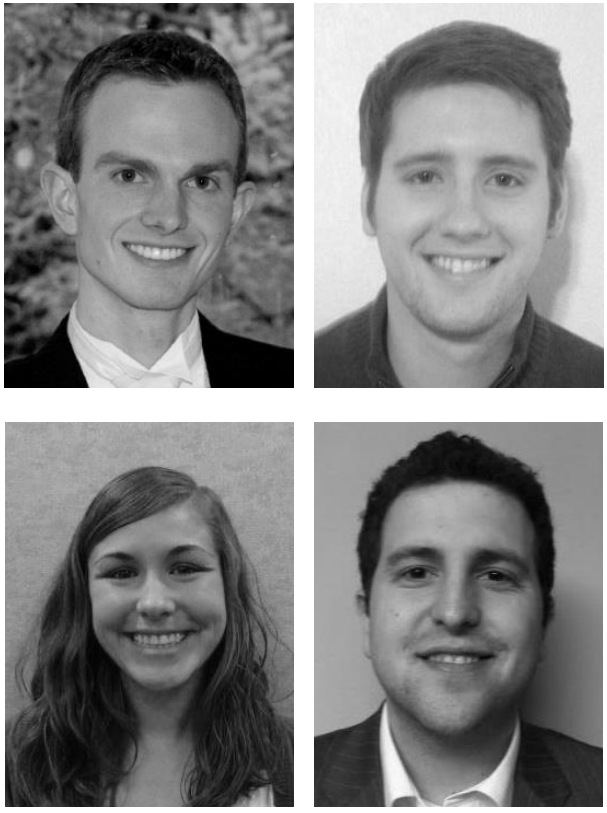
Thoenen, H. (1995). Neurotrophins and neuronal plasticity. *Science*, 270, 593-598.

Van Praag, H., Christie, B. R., Sejnowski, T. J., & Gage, F. H. (1999). Running enhances neurogenesis, learning, and long-term potentiation in mice. *Proceedings of the National Academy of Sciences of the United States of America*, 96, 13427-13431.

Van Praag, H., Kempermann, G., & Gage, F. (1999). Running increases cell proliferation and neurogenesis in the adult mouse dentate gyrus. *Nature Neuroscience*, 2, 266. doi:10.1038/6368

Yamada, K., Mizuno, M., & Nabeshima, T. (2002). Role for brain-derived neurotrophic factor in learning and memory. *Life Sciences*, 70, 735-744. doi:10.1016/S0024-3205(01)01461-8

The Differential Effectiveness of Survey Recruiting Methods



by Joshua Bishop, Darren Hansen, Chantelle Lyman, and DJ Steffensen

Participant recruitment in survey research is an essential part of many research studies, especially those conducted in academic settings. The purpose of this study was to determine the current, most-effective methods of recruitment. We used four methods to administer the same survey. They included the traditional methods of classroom presentation and face-to-face recruitment using fliers, and the more recent methods of mass e-mails to class lists and social-network mass messaging. We analyzed the data using a chi-square test to compare and determine the most effective method of recruitment. We found that recruitment through the social-networking site Facebook was the most effective method, with 37% of those recruited taking the survey. Mass emails to class lists was the next most effective method, followed by face-to-face recruiting and classroom presentations. These findings were statistically significant at $p < .01$. For researchers looking for a diverse sample, Facebook offers a quick, inexpensive, and efficient method of recruiting.

Participant recruitment is an essential part of survey research. Several methods are currently used to recruit participants. Before the advent of computer-based mass messaging, face-to-face recruiting was often used. Researchers visited classrooms, where they gave brief presentations and invited students to participate. Other face-to-face recruiting involved the distribution of fliers containing information on how to participate (Rife, 2010). Although these methods of recruiting can be time consuming, they offer specific advantages. One is that personal contact with potential participants allows the recruiter's personality to promote participation. Face-to-face recruiting also allows researchers to recruit when it is most convenient for the participants, namely, while they are attending class meetings (Lindsay, 2005; Rife, 2010). These advantages make face-to-face a popular method of recruitment.

With recent advances in technology and communications, Internet-based surveys have become popular (Lenert & Skoczen, 2002), not least because they can occur quickly and cost-effectively (Ramo, Hall, & Prochaska, 2010). Surveys can be distributed to hundreds of potential

participants simultaneously (Birnbaum, 2004; Rife, 2010) and may enable survey results to be more generalizable (Klauer, Musch, &Naumer, 2000). Additionally, there is evidence that online recruitment reduces social-response bias that may otherwise occur with sensitive issues (Cantrell & Lupinacci, 2007; Rhodes, Bowie, & Hergenrather, 2003). For example, one study found that when compared to participants surveyed through paper-based methods, those surveyed online reported lower levels of social anxiety and social desirability (Joinson, 1999). Because of its cost-effectiveness, generalizability, and quick delivery, online recruiting has become increasingly popular.

Little experimental research has been done to determine whether a particular method of recruiting is more effective than the others (Koo & Skinner, 2005), where effectiveness is measured in terms of response rate. The purpose of this study was to determine the differential effectiveness of four popular methods: face-to-face with fliers, classroom presentations, mass e-mails to class lists, and social-network mass messaging.

There are many aspects to consider in further determining the relative cost-effectiveness of the methods. For instance, research costs (Lenert & Skoczen, 2002; Ramo, Hall, & Prochaska, 2010) and research time spent may differ depending on the method used. We attempted to weigh costs and benefits of each method in our analysis after determining their relative effectiveness. We hypothesized that social-network mass messaging would be most effective because of its convenience for participants.

Method

Participants

We attempted to recruit survey respondents who were representative of the Brigham Young University (BYU) undergraduate-

student population. Thus recruitment included face-to-face invitations, e-mailed invitations, in-class invitations, and Facebook (www.facebook.com) invitations. The face-to-face method involved two researchers, one male and one female, handing out printed fliers at the Cougareat, a food court at BYU. The fliers contained a web link to the survey. This was perhaps the most representative method, as the Cougareat is a common gathering place for students of many fields of study. For the e-mail method, a mass e-mail with a link to the survey was sent via Blackboard (blackboard.byu.edu), an online classroom-management tool. This method benefitted from its large and somewhat diverse pool, yet was limited by our available access—our access to emails was determined by the classes in which we were enrolled. The same two researchers who used the face-to-face method visited classes, where they announced the survey and wrote the web link on a whiteboard. Again, this was limited to classes where access was granted. Finally, the Facebook method involved one researcher sending an invitation to his "friends" to take the survey via a web link. He randomly populated the friends list by selecting people based on the first letter of their last name. Although this method was perhaps representative of college-age participants, it was the least representative of the BYU population, as it opened the survey to non-BYU students.

The total number of participants recruited was 357 (face-to-face, n=100; e-mail, n=127; in-class, n=70, and Facebook, n=60). Most participants were ages 18–24 and were enrolled at BYU.

Procedure

The survey was titled "Movies" (see Appendix A) and included general questions about movie-theater behavior. Demographic items of the survey included such things as gender, race, and highest level of education. Because the purpose of the study was to compare percentages of response, the actual answers to most of the questions

were irrelevant. The question "How did you hear about this survey?" was included at the beginning of the survey. Answer options for this question were (a) word of mouth, (b) e-mail (c) in-class, (d) Facebook, and (e) other. Data from respondents who answered "other" were discarded. The movie survey was published at the Qualtrics website (www.qualtrics.com) and made available for one week.

Analysis

We obtained the return rate for each method by calculating the percentage of invitees who completed the survey. We calculated the percentages by dividing the number of people who completed the survey by the number of people who were recruited. To determine whether there was a significant difference between methods, the percentages were compared using a chi-square test of independence.

Results

As shown in Table 1, recruitment through Facebook (n=22) resulted in a 37% return rate. Blackboard e-mails (n=35) brought a 28% return, face-to-face recruitment (n=11) 11%, and in-class recruitment (n=3) 4%. Males and females responded equally. The results from five respondents were deemed unfit for the survey so a total of 71 respondents were included in the chi-square analysis.

We used a contingency table (see Table 1) for the chi-square test for independence. After using the expected and observed outcomes to calculate the value of each cell, we found that the rates of return varied significantly according to the method by which participants were recruited, $x^2(3, N=71)=30.96$, $p < .01$.

Discussion

Based upon our results, we conclude that Facebook was the most effective method for recruiting participants in our survey. Because the chi-square test for independence yielded a significant result, the pattern of the observed response-rate percentages was different than the pattern

of response-rate percentages expected by chance. The Facebook sample was also the most diverse among the four methods in terms of education level, age, and marital status.

Some limitations accompanied our study. Although the pool of Facebook "friends" from which we recruited was large (N=800), the entire pool identified with one person. It is therefore unlikely that a Facebook sample could ever be purely representative of any population other than that an individual's circle of acquaintances, thus limiting external validity. There is also likely some effect of familiarity on those recruited via Facebook. Potential respondents who know the recruiter well might feel an obligation to respond to the request.

The in-class method was limited to one sample of BYU psychology students, and the e-mail method likewise only recruited from a single sample. Although the face-to-face method produced only an 11% return rate, it may have been the most representative sample of BYU students due to the popular location at which the fliers were distributed. It is reasonable to assume that the face-to-face method would produce a higher response rate if the survey was conducted in paper form at the time of recruitment rather than requiring respondents to complete the survey online. Although we defined effectiveness in terms of response rate, an element of effectiveness is the representativeness of the sample. If a researcher wants the results of his or her survey to adequately predict the behavior of a specific population, the sample from which participants are drawn should properly represent the targeted population. This will allow the results to be generalizable.

Another limitation of the study might be that the topic of movies was more interesting to some potential participants than to others. Further research could investigate levels of response to surveys across various topics. Also, those receiving the survey link from an e-mail or

Facebook message had instant access to the survey. They needed only to click on a web link and answer a few questions. In contrast, those who were recruited in class or face-to-face had to enter the web link in a browser in order to take the survey, which may have discouraged potential respondents from taking it.

As already noted, future studies might involve the same methods but use different types of surveys. Facebook works well for online surveys but may be unworkable for a two-hour session that requires people to travel in order to participate. Another idea for future research is to use the same survey methods but offer incentives for participation. No incentives were offered in the present study. For example, it seems reasonable that in-class recruiting might work better if the recruiters were to offer extra credit, money, food, or other free items.

References

Birnbaum, M. H. (2004). Human research and data collection via the internet. *Annual Review of Psychology*, 55, 803–832.

Cantrell, M. A., & Lupinacci, P. (2007). Methodological issues in online data collection. *Journal of Advanced Nursing*, 60, 544-549.

Joinson, A. (1999). Social desirability, anonymity, and Internet-based questionnaires. *Behavior Research Methods, Instruments, & Computers*, 31, 433-438. doi: 10.3758/BF03200723

Klauer, K. C., Musch, J., & Naumer, B. (2000). On belief bias in syllogistic reasoning. *Psychological Review*, 107, 852-884.

Koo, M., & Skinner, H. (2005). Challenges of Internet recruitment: A case study with disappointing results. *Journal of Medical Internet Research*, *7*(1). doi: 10.2196/jmir.7.1.e6

Lenert, L., & Skoczen, S. (2002). The Internet as a research tool: Worth the price of admission? *Annals of Behavioral Medicine*, 24, 251–256.

Lindsay, J. (2005). Getting the numbers: The unacknowledged work in recruiting for survey research. *Field Methods*, *17*(1), 119-128. doi: 10.1177/1525822X04271028

Ramo, D. E., Hall, S. M., & Prochaska, J. J. (2010). Reaching young adult smokers through the Internet: Comparison of three recruitment strategies. *Nicotine and Tobacco Research*, 12, 768-775.

Rhodes, S. D., Bowie, D. A., & Hergenrather, K. C. (2003). Collecting behavioural data using the world wide web: Considerations for researchers. *Journal of Epidemiology and Community Health*, 57, 68-73.

Rife, M. E. (2010). Ethos, pathos, logos, kairos: Using a rhetorical heuristic to mediate digital survey recruitment strategies. *IEEE Transactions on Professional Communications*, 53, 260–277.

Table 1
Contingency Table of Chi-square Test for Independence.

		Facebook	Blackboard E-mail	Face-to-face with fliers	In-class presentation	Total
Response Rate %	Observed	37% (22/60)	28% (35/127)	11% (11/100)	4% (3/70)	71
	Expected	*See note below.*				
Total invited		60	127	100	70	357

Note. Researchers were not concerned with the amount of respondents, only in the degree to which response-rates were or were not similar across all categories. Thus, the expected response-rates could have been anything, so long as they were equal.

Appendix A

Movies Survey

1. This survey will ask you questions about your movie theater preferences and behaviors. There will also be several questions about demographics such as age, education, race, and gender. There is no compensation for this test, but you will be helping us gather information for this study. There are no risks involved and the questions are anonymous and aren't meant to be too personal or offensive. If you have read this and consent to taking this survey, please select "Yes" and continue with the survey. If you do not wish to participate, please select "No". Thank you.
2. What is your gender?
3. What is your race?
4. What is your age?
5. Which best describes you highest level of education achieved?
6. If you are currently enrolled in a university, what is your major?
7. How did you hear about this survey?
8. When you buy tickets to the theater, which method do you use to purchase the tickets?
9. Do you get the movie theater popcorn?
10. Do you buy drinks at the theater?
11. Uh, we had a slight weapons malfunction, but uh... everything's perfectly all right now. We're fine. We're all fine here now, thank you. How are you?
12. Do you buy candy or other treats at the theater (besides popcorn and drinks)?
13. Where do you like to sit in the theater?
14. Is it safe? Is it secret?
15. Will you commit to this program?
16. When there is a movie you want to see, what do you do most often?
17. Please select the answer that best matches you / how you feel.
18. Are you currently in a dream? Or are you awake?

Emotions in Conflict Resolution

A New Model of Constructive Conflict

by Emily Ann Warren

Conflict is basic to living, and emotion is fundamental to the emergence and resolution of conflict. Early theoretical approaches to emotion described it in terms of physiological states, but more recent research points to its connection to cognitive appraisal and goal progress. Specifically, emotion is characterized as mediating between cognition and behavior. This review identifies shortcomings of the "emotion as a mediator" approach, including its overemphasis on negative emotions as well as its failure to consider the complicated role of human agency. A new model is proposed that incorporates constrained agency, positive emotion, and cognitive appraisal as components of a feedback loop.

Conflict is basic to human experience and occurs at all levels of society. It ranges from intrapersonal dissonance to interpersonal rifts to civil and world wars. Conflict can be defined as any situation or endeavor in which two or more individuals or parties have beliefs, views, or objectives that appear to be incompatible (see Halperin, Sharvit, & Gross, 2011). As agentic beings capable of founding and maintaining societies for thousands of years, humans are no strangers to conflict. As Galtung (2001) asserts, the fact that we are around at all at this point testifies to a lot of conflict-resolution capacity.

Because we are emotional beings, conflict is rarely, if ever, resolved through simple logic. Much like rhetoricians, psychologists understand that cognition and emotion contribute to conflict (see Lewis, Haviland-Jones, & Barrett, 2008). For Poblet and Casanovas (2007), emotion is the "principal currency" of negotiation and conflict resolution (p.145).

Recently researchers' interest in conflict has broadened from mere resolution to the notion that conflict can be used constructively at any level (Blumberg, Hare, & Costin, 2006). Current models portray emotion as a mediator between cognition and behavioral outcomes in conflict-resolution attempts. A model of constructive conflict would likely require a focus on positive emotion in conflict resolution in addition to the traditional focus on the management and suppression of negative emotion.

Although it has been acknowledged that emotion plays a role in conflict resolution, the specifics of this role have yet to be articulated. Doing so may benefit from (a) highlighting the positive emotion in conflict and (b) investigating how emotion can be both input and output in a feedback loop involving emotion, cognition, and behavior.

A Brief History of Emotion

Emotion is not easily defined. Kleinginna and Kleinginna (1981) offered this definition:

> [Emotion is] a complex set of interactions among subjective and objective factors, mediated by neural-hormonal systems, which can (a) give rise to affective experiences such as feelings of arousal, pleasure/displeasure; (b) generate cognitive processes such as emotionally relevant perceptual effects, appraisals, labeling processes; (c) activate widespread physiological adjustments to the arousing conditions; and (d) lead to behavior that is often, but not always, expressive, goal-directed, and adaptive. (p. 355)

Physiological Models of Emotion

Early models of emotion focused primarily on its physiological components. One of the first, the James-Lange theory (James, 1884), proposed that physical sensations in response to stimuli elicit subjective feelings. According to this perspective, when we encounter a frightening stimulus, such as a snake, our muscles tense, our heart races, and we then experience fear subjectively. Nearly half a decade later, Cannon (1927) and Bard (1934) proposed a new theory that physical responses and subjective feelings occur simultaneously in response to a stimulus. Thus, encountering a snake would elicit muscle contractions and feelings of fear at precisely the same moment. Later, Schachter and Singer (1962) offered a different theory. They suggested that emotional experience involves two factors: (a) a physiological response and (b) a cognitive assessment of that response that leads to subjective feelings. Similar to the James-Lange theory, encountering a snake initially leads to physical sensations. However, these may be similar for multiple emotional states. Thus the individual consciously appraises and interprets the situation, resulting in the subjective feeling.

Cognitive Approaches to Emotion

Contemporary approaches to emotion have further emphasized the role of cognition in emotion. The Somatovisceral Afference Model of Emotion (SAME; Cacioppo, Berntson, & Klein, 1992) builds upon the James-Lange and Schachter-Singer theories. It recognizes that physical responses to a stimulus can range from very specific to quite general. The degree of specificity places differential requirements on the cognitive processing that precedes emotion. An encounter with a snake, for instance, would likely require relatively little processing due to the highly specific nature of the physical response, whereas the more general arousal experienced during public speaking may require more extensive processing in order to produce embarrassment rather than enthusiasm or vice versa.

Other recent models have placed greater weight on cognition than on physiology in the causation of subjective feelings. Ellsworth (1991), for example, analyzed the cognitive interpretation of a situation as a series of appraisals, not just one.

Emotion in Conflict Resolution

The role of emotion in conflict resolution has been linked to cognition, as in the cognitive appraisals already described. Yap and Tong (2009) view cognitive appraisal as providing the framework in which the person evaluates and otherwise makes sense of events. Appraisal occurs most often in progress toward a goal (see Bell & Song, 2005; Carver & Scheier, 2000).

Emotion as Mediator: A Linear Approach

The most prominent models of emotion's role in conflict include a process in which cognition leads to emotion, which, in turn, motivates specific behaviors (Bell & Song, 2005). That is, emotions are defined by the cognitive antecedents they, in turn, modify. In risky or high-conflict situations, Loewenstein, Weber, Hsee, and Welch (2001)

suggested that emotions mediate the relationship between an individual's cognitive assessment of risk and subsequent behavior. This model has been widely adapted for use in conflict situations.

Nair (2008) has faulted the Lowenstein et al. model for its unidirectionality. Specifically, it neglects the possibility that behavior may be a cause of emotion. Moreover, to the extent that conflict is not invariably linear (Obeidi, Hipel, & Kilgour, 2005), it may follow that cognition, emotion, and behavior affect and are affected by each other.

Managing Negative Emotions: The Best of the Worst

According to the "emotion as a mediator" model, emotion is experienced as the outcome of the appraisal process. Because appraisal in high-conflict situations is rarely positive, conflict research has focused largely on managing negative emotions. Indeed emotions often are considered the "antithesis of rationality" and thus seem to reduce the effectiveness of conflict-resolution techniques (Nair, 2008, p. 367). Particularly in the workplace, conflicts are considered best managed once emotions have been placed aside (Scott, 2008).

As already mentioned, negative emotions garner much attention in conflict analysis and resolution, and can be categorized as "hard" or "soft." Hard emotions include anger, irritation and aggravation. Sadness, hurt, concern, and disappointment are considered soft emotions (Sanford, 2007). Hard emotions increase negative communication, and soft emotions affectively neutralize communication. Thus, resolution consists of moving from hard emotions to soft ones (Greenberg & Johnson, 1988; Jacobson & Christensen, 1996). Other conflict research has investigated the "best" hard emotions from which to reach resolution. According to Halperin, Russell, Dweck, and Gross (2011), feelings of anger without hatred lead to increased willingness to compromise. Further, Sinacer et al. (2011) found that threats are an even more effective starting point than anger.

Discussion

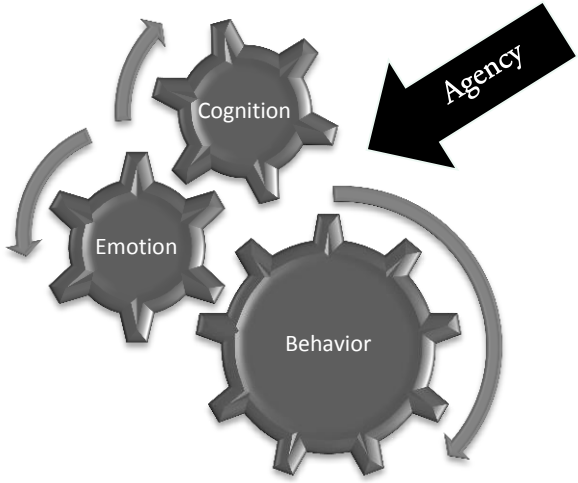
Research in emotion and conflict has produced linear models in which emotion is determined by cognition and produces behavior. Such models have limitations, however. The linear approach doesn't allow for reappraisal nor has it included positive emotion.

Constructive Conflict: A Fluid Approach

Recently, scholars have suggested that conflict can be used constructively in any situation (Blumberg et al., 2006; Coleman, 2012; Johnson & Johnson, 2012). An essential element of constructive conflict is the ability of parties to reevaluate their initial judgments and incorporate new information into their appraisals (Blumberg et al., 2006). Likewise, conflict transformation, which is a way of moving toward constructive conflict, requires consideration of the underlying emotions (Jameson, Bodtiker, & Linker, 2010; Jameson, Bodtiker, Porch, & Jordan 2010; Yungbluth & Johnson, 2010).

Combining these elements yields a new approach such as that shown in Figure 1. The gear-like model represents a "fluid approach" to constructive conflict that includes cognition, human agency, and the reframing of negative and positive emotions.

Figure 1. A fluid approach to constructive conflict



Interlocking Gears: Cognition, Emotion, and Behavior

Building on Ellsworth's (1991) finding that emotion requires a series of cognitive judgments, the new model frames cognitive appraisals as events that occur and recur as behavioral decisions are made. Cognitions interact with emotions much like two gears turning together, allowing an individual to assess and reassess their feeling and thinking. As appraisals of both the situation and the individual's response to it recur, alterations can be made in the level and form of cognition, affect, and behavior.

Constrained Agency

Because individual control is required to enable constructive conflict, the model makes a place for human agency, which Slife and Fisher (2000) describe as the notion that, in regard to thoughts, feelings, and behaviors, one has the ability to act otherwise. Research on this concept describes individuals as having a sense of "cognitive

control" over their cognitive and affective experiences (Chiew & Braver, 2010, p. 842). Contrary to the deterministic perspective, the agentic perspective argues that individuals can interrupt pre-established processes with their choices. It is for this reason that the gears in the model are "greased" with agency. Without individual choice, including the initial choice to engage in conflict, the gears eventually come to a halt. In this way, even a decision not to enter into a conflict is a choice with a consequence; just as choosing not to lubricate the gears is a choice to cease their turning. Only with agency does conflict have the prospect of turning constructive.

Human agency is not limitless, however. Though it underwrites the ability to choose one's actions, one is not always in control of his or her consequences. Additionally, one only has limited command of one's circumstances. In a very real sense, agency is bounded by the choices of others and the demands of the biophysical world (Sugarman & Sokol, 2012). Thus, the agency within this model is not unlimited, but rather a constrained, bounded form.

Comprehensive Emotion

As previously noted, conflict research has predominantly investigated negative emotions. Recently, however, scholars have called for more research on positive emotions in the conflict process (Nair, 2008) and on their adaptiveness (Kanskea & Kotza, 2011). Although previous approaches advocated a move from hard to soft emotions, the fluid model of constructive conflict reframes cognition and emotions in a positive light.

As defined by Brigg (2003), reframing is the act of shifting one's attitude or orientation. Although this concept may be typically performed by a third party, it is possible for individuals to intervene in their own thought and affect. One example of reframing is forgiveness, which "involves transforming negative thoughts, affect, behavior or

motivations toward the 'offender' into positive ones" (Rizkalla, Wertheim, & Hodgson, 2008, p. 1592). Other examples include reframing anger into compassion, frustration into knowledge seeking, and contempt into vulnerability through conscious and persistent cognition and affect decisions. As the realm of emotion expands, so too do the possibilities of reconciliation, resolution, and relationship.

A Hypothetical Case Study of the Fluid Model. Six months ago, Jim and Pam bought a cozy home in a suburban neighborhood. It was their first major purchase as a married couple, and they were excited to finally have a place of their own. Pam had just finished her degree and Jim was still going to school, so finances were tight. One Sunday evening, Pam was in the front yard gardening when Jim came out to discuss bills. Before Jim had a chance to say anything, Pam expressed her desire to plant an apple tree in the front yard. Already frustrated by the state of their finances, Jim quickly said, "No!" He had appraised Pam's request as selfish and spendthrift, causing him to respond with anger. In response to Jim's anger, Pam felt that he considered her needs unimportant. She responded with complaints about the excess money Jim spent on eating out.

According to the linear model of conflict, this sequence continues in a cycle that is destructive to both parties and their relationship. When the fluid model is applied, however, the conflict moves from destructive to constructive. When Jim hears Pam's complaints about the money he spends on food, he begins to realize that perhaps Pam views his spending habits just as selfishly as he views hers. Instead of responding in anger at her accusation, he chooses to listen for more information. Jim asks Pam what it is about his spending that bothers her. As Pam responds, Jim begins to move from anger and frustration to understanding and empathy. He now recognizes that he spends more money on food because it is something he values highly and is

able to explain to Pam the importance he places on flavor and healthful benefits. He then asks her what it is about the apple tree that she values. In considering her answer, Jim is able to realize that Pam values the yard's ambiance and having something to take care of. After understanding each other's positive desires, Pam and Jim are able to discuss how to apportion their income in ways that meet their respective needs. In doing so, they are able to successfully resolve the initial conflict while building skills that advance their relationship.

While the wheels of cognition and emotion continued turning, Jim applied his agency to recognize alternative thoughts and emotions that smoothed the situation and strengthened their relationship. He and Pam were able to turn a potentially destructive conflict into a constructive one.

This paper proposes a fluid model of constructive conflict that includes cognitive appraisals and reappraisals, reframing negative emotions, and constrained agency that work together to produce positive outcomes. Future research could examine the role of emotion in framing and reframing conflict, using specific methods for reframing, and identifying the characteristics of conflict situations in which constrained agency plays a critical role in resolution.

References

Bard, P. (1934). Emotion: I. The neurohumoral basis of emotional reactions. In C. Murchison (Ed.), *Handbook of general experimental psychology* (pp. 264-311). Worcester, MA: Clark University Press.

Bell, C., & Song, F. (2005). Emotions in the conflict process: An application of the cognitive appraisal model of emotions to conflict management. *International Journal of Conflict Management*, *16*(1), 30-54.

Blumberg, H. H., Hare, A. P., & Costin, A. (2006). *Peace psychology: A comprehensive introduction*. New York, NY: Cambridge University Press.

Brigg, M. (2003). Mediation, power, and cultural difference. *Conflict Resolution Quarterly*, *20*(3), 287–306.

Cacioppo, J. T., Berntson, G. G., & Klein, D. J. (1992). What is an emotion? The role of somatovisceral afference, with special emphasis on somatovisceral "illusions." *Review of Personality and Social Psychology*, 14, 63-98.

Cannon, W. (1927). The James-Lange theory of emotions: A critical examination and an alternative theory. *American Journal of Psychology*, 39, 106-124.

Carver, C. S., & Scheier, M. F. (2000). Origins and functions of positive and negative affect: A control-process view. In E. T. Higgins & A. W. Kruglanski (Eds.), *Motivational science: Social and personality perspective* (pp. 256-272). New York, NY: Psychological Press.

Chiew, K. S., & Braver, T. S. (2010). Exploring emotional and cognitive conflict using speeded voluntary facial expressions, *Emotion*, *10*(6), 842-854.

Coleman, P.T. (2012). Psychological components of sustainable peace. *Peace Psychology Book Series*, 55-84.

Ellsworth, P.C. (1991). Some implications of cognitive appraisal theories of emotion. *International Review of Studies on Emotion*, 1, 143-160.

Galtung, J. (2001). After violence: reconstruction, reconciliation, resolution: Coping with visible and invisible effects of war and violence. In M. Abu-Nimer (Ed.), *Reconciliation, justice and coexistence*. New York, NY: Lexington Books.

Greenberg, L. S., & Johnson, S. M. (1988). *Emotionally focused therapy for couples*. New York, NY: Guilford Press.

Halperin, E., Russell, A. G., Dweck, C. S., & Gross, J. J. (2011). Anger, hatred, and the quest for peace: Anger can be constructive in the absence of hatred. *Journal of Conflict Resolution*, *55*(2), 274-291.

Halperin, E., Sharvit, K., & Gross, J. J. (2011). Emotion and emotion regulation in intergroup conflict: An appraisal-based framework. In Bar-Tal, D. (Ed.), *Intergroup conflicts and their resolution: A social psychological perspective* (pp. 83-124). New York, NY: Psychology Press.

Jacobson, N. S., & Christensen, A. (1996). *Integrative couple therapy: Promoting acceptance and change*. New York, NY: Norton.

James, W. (1884). What is an emotion? *Mind*, 9, 188-205.

Jameson, J. K., Bodtiker, A. M., & Linker, T. (2010). Facilitating conflict transformation: Mediator strategies for eliciting emotional communication in a workplace conflict. *Negotiation Journal*, *26*(1), 25-48.

Jameson, J. K., Bodtiker, A. M., Porch, D. M., & Jordan, W. J. (2010). Exploring the role of emotion in conflict transformation. *Conflict Resolution Quarterly*, *27*(2), 167-192.

Johnson, D. W., & Johnson, R. T. (2012). Restorative justice in the classroom: Necessary roles of cooperative context, constructive conflict, and civic values. *Negotiation and Conflict Management Research*, *5*(1), 4–28.

Kanskea, P., & Kotza, S. A. (2011). Positive emotion speeds up conflict processing: ERP responses in an auditory Simon task. *Biological Psychology*, *87*(1), 122-127.

Kleinginna, P. R., & Kleinginna, A. M. (1981). A categorized list of emotion definitions, with suggestions for a consensual definition. *Motivation and Emotion*, *5*(4), 345-379.

Lewis, M., Haviland-Jones, J. M., & Barrett, L. F. (2008). *Handbook of emotions* (3rd ed.). New York, NY: Guilford.

Loewenstein, G. F., Weber, E. U., Hsee, C. K., &Welch, N. (2001). Risk as feelings. *Psychological Bulletin*, *127*(2), 267-286.

Nair, N. (2008). Towards understanding the role of emotions in conflict: A review and future directions. *International Journal of Conflict Management*, *19*(4), 359-381.

Obeidi, A., Hipel, K. W., & Kilgour, D. M. (2005). The role of emotions in envisioning outcomes in conflict analysis. *Group Decision and Negotiation*, 14, 481-500.

Poblet, M., & Casanovas, P. (2007). Emotions in ODR. *International Review of Law Computers & Technology*, *21*(2), 145-155.

Rizkalla, L., Wertheim, E. H., & Hodgson, L. K. (2008). The roles of emotion management and perspective taking in individuals' conflict management styles and disposition to forgive. *Journal of Research in Personality*, *42*(6), 1594-1601.

Sanford, K. (2007). Hard and soft emotion during conflict: Investigating married couples and other relationships. *Personal Relationships,* 14, 65-90.

Schachter, S., & Singer, J.-E. (1962). Cognitive, social, and physiological determinants of emotional state. *Psychological Review*, 69, 379-99.

Scott, G. G. (2008). Take emotion out of conflict resolution: Think about workplace conflicts in a new way. *Training and Development*, *62*(2), 84-85.

Sinaceur, M., Kleef, V., Gerben, A., Nealte, M. A., Adam, H., & Haag, C. (2011). Hot or cold. *Journal of Applied Psychology*, *96*(5), 1018-1032.

Slife, B. D., & Fisher, A. M. (2000). Modern and postmodern approaches to the free will/determinism dilemma in psychology. *Journal of Humanistic Psychology*, *40*(1), 80-108.

Sugarman, J., & Sokol, B. (2012). Human agency and development: An introduction and theoretical sketch. *New Ideas in Psychology*, 30, 1-14.

Yap, A. J., & Tong, E. M. W. (2009). The appraisal rebound effect: Cognitive appraisals on the rebound. *Personality and Social Psychology Bulletin*, *35*(9), 195-221.

Yungbluth, S. C., & Johnson, S. E. (2010). With respect to emotion in the dominion of rationality: Managing conflict through respectful dialogue. *Atlantic Journal of Communication*, 18, 211-226.

The Development of a Rating Scale for Humor Sensitivity

by Bryce Tobin, Nigel Goodwin, and Ronie Quinonez

Humor therapy has been growing in popularity in recent years and is now widely accepted as a viable method of therapy. This increase in popularity has brought the need to measure individual sensitivity to humor in order to predict whether prospective clients would be a good fit for humor therapy. The Humor Sensitivity Scale (HSS) contains 10 items specific to two domains: physical manifestations and cognitive appeal. Factor analysis of scale results identified a third factor, namely, social facilitation. Although Cronbach's alpha (α=.68) was significant, this was explained by the low content-validity ratio (CVR) of two of the scale items (CVR range=.11-.63).

hy is it that a joke will bring one person to his or her knees with laughter while others are unaffected? Sensitivity to humor may be considered equivalent to having a sense of humor. A sense of humor can be beneficial to refreshing one's ability to concentrate, relieving stress, generating positive emotions, promoting communication, strengthening group identity, and benefiting both the actor and the reactor (Olson, 1994; Simon, 1990). Similarly, televised comedy has been shown to promote health benefits, such as strengthening the immune system, as well as positive effects on heart disease, diabetes, blood flow, and depressive symptoms (Brown, 2007). Humor can also be used to cope with stressors (Martin, 2002).

There is evidence that laughter and humor can be effective for psychotherapy (Kekae-Moletsane, 2008). Humor sensitivity is encompasses several personality traits (Olson, 1994) and may be an important factor in both physical and psychological health. Cattanach, 2003; Kaduson, Cangelosi, & Schaefer, 2004; Kekae-Moletsane, 2008). A measurement scale of humor sensitivity could be beneficial to therapists.

We aimed to create a brief rating scale. In doing so, we hoped to help individuals improve their humor sensitivity as well as advance the usage of humor therapy. We operationally defined humor sensitivity as

an individual's susceptibility to jokes in everyday situations. The construct was defined by two independent domains. The first was cognitive manifestation, which we defined as being cognitively entertained by the occurrence. The second domain was physical manifestation, such as laughing or smiling.

Laughing is an expected reaction to stimuli such as jokes (Roth, Ritchie, Hudson, & Mergard, 2011). According to Svenbak, Sven, & Bergen (1974), laughing involves specific muscle groups and is characterized by overall muscle relaxation. The positive effects of laughing (Martin, 2002) are related to the two domains of the Humor Sensitivity Scale (HSS) we designed and tested.

The cognitive manifestation of humor sensitivity involves the resolution of initial incongruity (Bartolo, Benuzzi, Nocetti, Baraldi, & Nichelli, 2006). Functional-magnetic resonance imaging (fMRI) has identified brain activity correlated with this resolution (Bartolo et al., 2006). The brain areas activated vary depending on whether the humor stimulus is visual, as in the case of a cartoon, or multimodal in the manner of a television show (Polimeni, Campbell, Gill, Sawatzky & Reiss, 2010). To measure humor sensitivity, the HSS sought to measure cognitive manifestations by asking specifically how an individual thinks when experiencing something he or she considers humorous. Physical manifestations were measured by asking if an individual smiled or laughed. There are no previous published humor-sensitivity scales. We hypothesized that the HSS would reliably and validly measure humor sensitivity.

Method

Participants

One-hundred-eighteen individuals (39 men, 79 women) volunteered to take the HSS through links provided on Facebook and by e-mail. The HSS was administered through Qualtrics

(www.qualtrics.com) during a 2-week period. This provided a convenience sample. Of the participants, 1% had completed some high school, 3% had a high-school diploma or its equivalent (GED, etc.), 90% had completed some college, 5% had completed an undergraduate degree, 1% had completed some graduate school, and <1% had completed a graduate degree. Ninety percent of the subjects were single, and the remaining 10% currently were married. The participant's age range was 17 to 57 with a mean of 21.5.

Item Construction

The HSS consisted of four demographic items, with five positively and six negatively-worded items per domain. The initial 30 items were presented to a panel of judges consisting of our undergraduate classmates in order to obtain content validity ratio (CVR) ratings. With 43 judges, items needed a CVR rating of at least .29 to be considered as having statistically-significant content validity. The 10 non-demographic items with the highest CVR ratings were used in the final questionnaire. The ratings ranged from .11-.63 (M=.42, S=.16). The participants answered items using a Likert-type scale from 1 (strongly disagree) to 4 (strongly agree). The six negatively-worded items were reverse scored (see Appendix A).

Statistical Analysis

The measure of reliability of the HSS was based on Cronbach's alpha, which measures internal reliability, and Pearson's bivariate correlation coefficient, which measures item consistency. We used factor analysis to analyze the factor structure of the HSS. The final item was used to evaluate face validity based on participant's answers. All data were analyzed using SPSS 19.

Results

The measure of reliability of the HSS was based on Cronbach's alpha, which measures internal reliability, and Pearson's bivariate

correlation coefficient, which measures item consistency. We used factor analysis to analyze the factor structure of the HSS. The final item was used to evaluate face validity based on participants' answers.

As stated previously, the average CVR was .42 with a standard deviation of .16. This is a moderate level of content validity. The range was from .11-.63 (see Table 1). Three items had exceptional ratings, four had moderate ratings, two were adequate, and only one had an inadequate rating.

Internal Consistency

Cronbach's alpha for the HSS was .68, indicating that the HSS was approaching the acceptable level for reliability. Using Pearson's bivariate correlation-coefficient, nine of the items were significant at $p<0.01$ (see Table 2). Ninety-eight (83%) of the respondents identified humor as the purpose of the survey. Only 6% identified the survey as specifically measuring humor or a sense of humor. This low face validity provided a potential barrier to malingering.

Factor Structure

A principal-components analysis showed that three components (see Table 3) accounted for 53.93% of the variance (see Table 4). This result was consistent with the deflection in the scree plot, where the three components had eigenvalues above 1.0: 3.22, 1.11, and 1.06 (see Figure 1). While three components were extracted, the HSS was intended to measure only two domains. This indicates an unforeseen component onto which items 1 and 4 loaded.

Discussion

The purpose of this study was to provide a reliable and valid measurement scale of humor sensitivity. The results support that the HSS can, with near acceptable reliability, measure an individual's level of humor sensitivity. Although this is not a low reliability score, it does raise some questions as to the reliability of items on the HSS. This

subpar Cronbach's alpha could be, in part, due to the use of two items in the HSS with unacceptably low CVR ratings. If these items were replaced or in the very least removed, the Cronbach's alpha would increase significantly.

Factor analysis showed that the HSS measured one of the domains we expected as well as another, unexpected domain. The items designed to measure physical manifestation of humor sensitivity correlated consistently. The items designed to measure cognitive were correlated less consistently and may have measured a different domain. This could be due to the fact that they did not focus solely on that domain. Items 1, 4, and 10 may have measured group interaction and social facilitation instead.

While there is a significant correlation between physical benefits and humor therapy, a revised HSS could have applications in organizations, counseling, and psychotherapy. For example, it could be used as a screening tool to identify individuals for whom humor therapy may be an effective treatment option. The HSS should be revised to assure minimal CVR ratings. The convenience sample consisted single, undergraduate students. Replications should extend to other age groups, as well as persons without college education.

References

Bartolo, A., Benuzzi, F., Nocetti, L., Baraldi, P., & Nichelli, P. (2006). Humor comprehension and appreciation: An fMRI study. *Journal of Cognitive Neuroscience*, *18*(11), 1789-1798. doi:10.1162/jocn.2006.18.11.1789

Brown, W. (2007). Two aspirins and a comedy: How television can enhance health and society. *Journal of Communication*, *57*(3), 609-611. doi:10.1207/s15327752jpa6101_4

Cattanach, A. (2003). Introduction to play therapy. *Journal of Personality Assessment*, *24*(1), 75-82. doi:10.1037/a0016338

Kaduson, H., Cangelosi, D., & Schaefer, C. (2004). The playing cure: Individualized play therapy for specific childhood problems. *New York Aronson Journal*, *45*(2), 235-245. doi:10.1037/t0018630

Kekae-Moletsane, M. (2008). Masekitlana: South African traditional play as therapeutic tool in child psychotherapy. *South African Journal of Psychology*, *38*(1), 367-375. doi:10.1007/s12117-010-9107-8

Martin, R. A. (2002). Is laughter the best medicine? Humor, laughter, and physical health. *Current Directions in Psychological Science*, *11*(6), 216-220. doi:10.1111/1467-8721.00204

Olson, H. (1994). The use of humor in psychotherapy. *London Jason Aronson Journals*, *45*(3), 79-89. doi:10.1111/j.1467-6494.2008.00507.x

Polimeni, J. O., Campbell, D. W., Gill, D., Sawatzky, B. L., & Reiss, J. P. (2010). Diminished humour perception in schizophrenia: Relationship to social and cognitive functioning. *Journal of Psychiatric Research*, *44*(7), 434-440. doi:10.1016/j.jpsychires.2009.10.003

Roth, W., Ritchie, S. M., Hudson, P., & Mergard, V. (2011). A study of laughter in science lessons. *Journal of Research in Science Teaching*, *48*(5), 437-458. doi:10.1002/tea.20412

Simon, J. (1990). Humor and its relationship to perceived health, life satisfaction, and morale in older adults. *Issues in Mental Health Nursing*, *11*(1), 17-31. doi:10.1111/1467-8721.00204

Svenbak, Sven, & Bergen, U. (1974). Three attitude dimensions of sense of humor as predictors of laughter. *Scandinavian Journal of Psychology*, *15*(3), 185-190. doi:10.1431/m.1467-9994.2008.052107.x

Table 1

Content-Validity Ratio (CVR) Results

Item	CVR
1	.42
2	.60
3	.55
4	.42
5	.37
6	.63
7	.30
8	.11
9	.49
10	.26

Table 2

Pearson Correlation - Coefficient Results

	1	2	3	4	5	6	7	8	9	10
1	1.00	-	-	-	-	-	-	-	-	-
2	-.06	1.00	-	-	-	-	-	-	-	-
3	.35**	-.20*	1.00	-	-	-	-	-	-	-
4	-.018	.04	-.07	1.00	-	-	-	-	-	-
5	-.33**	.25**	-.54**	.20*	1.00	-	-	-	-	-

Table 2 continues

Table 2 (continued)

	1	2	3	4	5	6	7	8	9	10
6	.12	-.20*	.28**	-.13	-.36**	1.00	-	-	-	-
7	-.24*	.19*	-.22*	.19*	.26**	-.28**	1.00	-	-	-
8	.19*	-.11	.34**	-.16	-.34**	.24*	-.43**	1.00	-	-
9	.21*	-.07	.31**	-.13	-.26**	.38**	-.33**	.39**	1.00	-
10	-.25**	.10	-.17	.08	.29**	-.12	.41**	-.29**	-.30**	1.00

* Significant at 0.05 level (2-tailed).

** Significant at 0.01 level (2-tailed).

Table 3

Component Matrix

	Component 1	Component 2	Component 3
Item 1	.49		.57
Item 2	.34	.42	-.38
Item 3	.65	.46	
Item 4		.31	.55
Item 5	.71	.63	
Item 6	.56		-.40
Item 7	.64	-.40	
Item 8	.65		
Item 9	.63		
Item 10	.55	-.38	.34

Table 4

Total Variance Accounted For Using Principal-Component Analysis

Initial Eigenvalues			
Component	Total	% Variance	Cumulative %
1	3.22	32.16	32.16
2	1.11	11.14	43.30
3	1.062	10.63	53.93
4	0.930	9.30	63.23
5	0.89	8.90	72.13
6	0.71	7.10	79.22
7	0.63	6.34	85.57
8	0.59	5.85	91.41
9	0.48	4.77	96.17
10	0.38	3.83	100

Table 5

Cronbach's Alpha

Reliability Statistics

Cronbach's Alpha	N of Items
.680	10

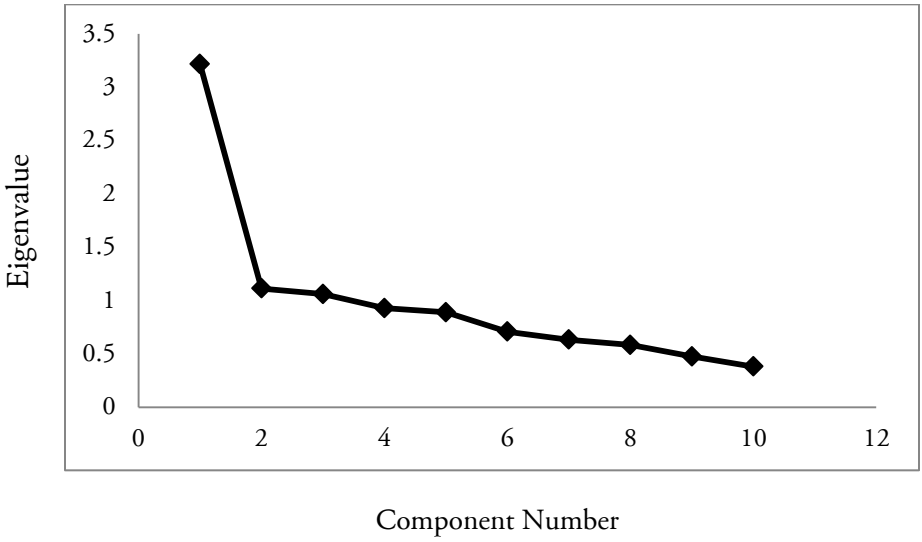


Figure 1: Scree Plot

Appendix A

Humor Sensitivity Scale

Gender: M F Age _____ Marital Status: Married Single Divorced

Education Level: Some High School High School Degree Some College

Undergrad Degree Some Grad School Graduate Degree

Please fill out this test to the best of your ability. Circle the response that applies.

1. I don't usually see the humor in situations that are funny for others.

Strongly Disagree Disagree Agree Strongly Agree

2. A well-placed joke can lighten the mood of most situations.

Strongly Disagree Disagree Agree Strongly Agree

3. I have trouble finding humor in everyday events.

Strongly Disagree Disagree Agree Strongly Agree

4. I don't need anyone around me for something to seem funny.

Strongly Disagree Disagree Agree Strongly Agree

5. I can find humor in most situations.

Strongly Disagree Disagree Agree Strongly Agree

6. I rarely smile at random humorous situations.

Strongly Disagree Disagree Agree Strongly Agree

7. If something is funny enough, I do more than just laugh (slap my knee, clap, etc.).

Strongly Disagree Disagree Agree Strongly Agree

8. I have trouble laughing at myself.

Strongly Disagree Disagree Agree Strongly Agree

9. When I laugh, I never laugh a lot.

Strongly Disagree Disagree Agree Strongly Agree

10. I find myself continuing to laugh after everyone has finished laughing.

Strongly Disagree Disagree Agree Strongly Agree

What do you think this test was measuring? _____

The Promotion of Adolescent Problem Drinking Through Social Attitudes and Pressures

by Kelsie Thompson

About 80% of adolescents in the United States are experimenting with alcohol by age 15 (Davies, 2012). A major factor in this rate of alcohol use can be explained by adolescent's propensity for learning from their environment (Tomilson & Brown, 2012). Unfortunately, the current social climate teenagers are experiencing could be promoting alcohol involvement (Coker & Borders, 2001). This review examines the impact of several social attitudes and pressures contributing to adolescent problem drinking. Further understanding of these factors may be valuable to parents and professionals aiming to prevent the development of problem adolescent drinking behaviors.

The adolescent years are considered a time of exploration and enjoyment in American society. Young people spend these years discovering who they are, what they desire to become, and how they will achieve their goals. Peers and parents alike often encourage them to "live in the moment," enjoy their youth, and refrain from worrying too much about taking on adult responsibilities (Lynch, Hurford, & Cole, 2002).

However, this carefree living can be a dangerous condition for an adolescent. Fear, hesitation, and caution are protective emotional responses that young minds are still learning to recognize and trust, and teenagers often mistakenly aim to overcome these functions rather than embrace the security they provide (Larsman, Eklöf, & Törner, 2012). Additionally, adolescent minds are still in the process of developing, and thus they fail to understand the causal connections between the choices they make and the consequences that may follow (Duangpatra, Bradley, & Glendon, 2009). This lack of foresight can yield devastating outcomes when combined with the socially disinhibiting and mentally impairing effects of alcohol.

Regardless of the dangers, many adolescents are turning to alcohol as a means of coping with stress. While the spectrum of physical and chemical dependencies continues to expand, ranging from drugs like cocaine and methamphetamine to media such as pornography and video games, alcohol stands out as the substance that appears to strike a dangerous balance between availability, prevalence, and addictiveness. Most teenagers know where to get their hands on some alcohol, and experimental drinking is considered normal. By age 15, 80% of adolescents in the United States have consumed alcohol at some point, and most of those drinking experiences have involved large amounts of alcohol in one sitting (Davies, 2012).

In addition to these social attitudes that support the perpetuation of adolescent drinking, major social pressures are responsible for pushing teenagers toward alcohol. Adolescents are bombarded by social expectations perpetuated by their peers, parents, and the media (Arnett, 1995). 'Fitting in' is often of the utmost importance to teenagers, leading them to fall victim to societal forces that impel them to drink (Kobus & Henry, 2010).

The most significant factor in preventing the development of problem drinking into full-blown addiction is understanding why the drinking begins and creating effective prevention programs that target these sources (Tomlinson & Brown, 2012). The social attitudes and pressures of American society appear to have created a perfect storm for the perpetuation of problem drinking in youth. The purpose of this review is to demonstrate how identifying and understanding the social attitudes and pressures that promote drinking behaviors in adolescents can equip parents and professionals with tools to prevent such issues from developing.

Social Attitudes

In every society and culture, social attitudes develop through the combined ideology of its members (Saucier, 2000). These attitudes could be considered the collective guidelines of a society, a rough combination of its members' values and beliefs that are perpetuated as they are practiced from generation to generation. Teenagers are constantly learning from their environment and are thus very susceptible to the influence of social attitudes within their country, culture, and family. Adolescent drinking habits, therefore, are often dependent on the attitudes exhibited in their society.

Social attitudes towards drinking tend to support a system in which adolescents are generally enticed by alcohol and permitted to experiment with it (Davies, 2012). While teens are aware that

alcoholism is an issue for some, they are also surrounded by examples of well-functioning, happy adults who can manage to drink socially without developing any major issues. As a result, teenagers begin to associate positive feelings with drinking, making alcohol appear far less threatening than it actually can be (Haase & Silbereisen, 2011). Following the examples within their social environment, teenagers are hardly being discouraged from drinking. In particular, general permissiveness of adolescent drinking and a lack of parental guidance on this subject are creating a social atmosphere that fails to protect adolescents from the dangers of getting involved in alcohol (Beck & Lockhart, 1992).

Permissiveness As Opposed to Prevention

The reckless nature of teenagers is biologically based. During the adolescent years, executive cognitive functions, including inhibition and self-control, are among the last to reach maturation (Parada et al., 2012). While navigating the landscape of adolescence, teens must rely mainly on personal experience and observation, rather than sound, logic-driven thought. It is to be expected, therefore, that teenagers will make mistakes and exhibit poor judgment from time to time.

However, Americans may be leaning on that biological deficit as an excuse for permissiveness towards teenage drinking, dismissing it as unpreventable. This belief is not supported by the plethora of research that points to social learning as the source of teen's attitudes toward alcohol (Tomlinson et al., 2012). According to this theory, drinking behaviors are learned through interaction and observation, and adolescents will model their behavior according to their exposure to drinking situations. Therefore, social attitudes may actually be more significant in the development of teenage drinking habits than their biological tendencies. The drinking attitudes and practices that

teenagers witness must be an appropriate model for them to learn from in order to overcome biological forces that encourage reckless drinking.

A variety of controllable situational factors play a major role in adolescent's drinking habits. Teenager's drinking rates tend to decrease when they are involved in other activities (Bot, Engels, Knibbe, & Meeus, 2007), so simply promoting other activities and hobbies in the place of drinking can inhibit its prevalence. Teens who show greater attachment levels to adults exhibit significantly less problem drinking behaviors (Baker, 2010), reflecting the necessity for adult mentors who take an interest in teenager's lives and strive to be a proper example to them.

Even the effects of unpreventable biological factors can be tempered simply by educating adolescents on their cognitive shortcomings. Drinking tends to be highly attractive to individuals who demonstrate low levels of premeditation and a high tendency towards sensation seeking (Adams et al., 2012), traits that are fairly common in adolescents (Theakston, Stewart, Dawson, Knowlden-Loewen, & Lehman, 2004). These teens focus on the immediate, exciting aspects of drinking, while failing to consider the dangers and consequences of consistent alcohol consumption. This failure to consider dangers, coupled with the encouragement from society to live freely and in the moment, encourages teens to feel at liberty to drink for their reckless enjoyment. However, Adams et al. (2012) demonstrated that assisting problem drinkers in recovery is most successful when the motives for drinking are specifically identified and addressed with adolescents. By recognizing the negative aspects of their habit and selecting alternative activities to improve their mental state, problem drinkers are empowered to overcome their drinking tendencies while remaining in control of their own treatment.

Parental Enabling

Parental involvement is one of the most significant factors in the control of teenage alcohol consumption (Lynch, Hurford, & Cole, 2002). Parents are in a unique position when it comes to the issue of adolescent drinking. They must balance their desire for their children to make right choices, the need of children for autonomy, and their own moral position towards alcohol. Indeed, the challenge of dealing with children's drinking decisions can be overwhelming and exhausting for many parents.

There is a necessary balance of involvement that parents must work to achieve in order to properly deal with teenage drinking. Worried parents often turn to manipulative parenting, popularly referred to as "helicopter parenting," as a means of protection for the child. Helicopter parenting is identified by parental over-involvement in the child's life, including making decisions for the child and restricting the child's autonomy (Fingerman et al., 2012). However, while parents may desire this complete control of the child, this is neither a realistic nor healthy goal. Children with over-involved parents tend to exhibit high levels of anxiety (Nanda, Kotchick, & Grover, 2012) and often lack the ability to take responsibility for their actions and learn from past mistakes (Lynch et al., 2002). Too much control of the child's alcohol consumption is an ineffective way of preparing them to make appropriate decisions about drinking in the future.

Nonetheless, parents need not feel like they have no influence over their children's drinking habits. The complicated nature of approaching the issue of alcohol often leaves parents feeling helpless in a situation where they are actually quite capable of impacting their teens. Beck and Lockhart (1992) proposed a comprehensive model of parental involvement and reaction that clearly lays out the consequences of different types of responses toward the child's drinking. Their model

proposes four stages for the parent: awareness, acceptance, action, and consequence. They recommend high awareness of children's susceptibility to drinking and strong acceptance of the possibility children will experiment with alcohol, but maintain that family values toward alcohol should remain consistent, and that disciplinary action should be guided by these values. By following a plan such as this, parents are capable of maintaining focus on the values they aim to instill in their children without living in denial of the prospect that their children will experiment with drinking.

Social Pressures

People experience a wide array of pressures that stem from their social nature. Most instinctually desire acceptance from their peers, and they will, therefore, encounter the social pressures that result from existing in relation to other people (Litt, Stock, & Lewis, 2012). These pressures are more explicit and forceful than the subtle social attitudes discussed previously. By forming societies, individuals subject themselves to influence by the wants and beliefs of those they are surrounded by. The force of the collective group can be hugely influential on the individual, and these social pressures can have a profound effect on human behavior and thought (Terry & Hogg, 1996).

Teenagers live in reference to their peers, and some become preoccupied with ensuring that they blend in well with the crowd (Litt et. al, 2012). They may also take their cues from television and computers (Arnett, 1995), their behavior being reinforced by the images they are exposed to. When these sources tend to support a positive image of drinking, adolescents will respond with excitement and enthusiastically embrace the use of alcohol (Haase & Silbereisen, 2011). The combined weight of conforming to peer expectations and the influence of the media can push teenagers toward drinking.

Peer Pressure

Relationships with peers are very important during the adolescent stage (Lakon & Valente, 2012), a fact that can be dangerous in the context of alcohol use. When asked what situations they tend to drink in, teenagers in one study responded almost exclusively with two responses – "at a party" and "with friends" (Beck & Lockhart, 1992). Adolescents associate alcohol with freedom from inhibition and a pathway to a generally good time, and therefore, they consider alcohol a social facilitator (Reis & Trockel, 2003), a method of freeing themselves from the awkwardness and social discomfort that can plague them. With alcohol, they can exist free of their own self-judgment, an opportunity not frequently afforded to the self-conscious teen.

The social buffer alcohol provides is particularly attractive to adolescents with very high levels of social anxiety, who often turn to alcohol as a method of improving their mental state (Adams et al., 2012; Theakston et al., 2004). This drinking motive is exceptionally disconcerting, as "drinking to cope" in adolescence is heavily associated with problem drinking and chronic alcoholism as an adult (Blumenthal, Leen-Feldner, Frala, Badour, & Ham, 2009). In order to prevent such issues from developing, adolescents can be instructed in more effective ways of dealing with their social anxiety.

Media Influence

The alcohol industry has made themselves comfortable in American popular media. Alcohol companies spend over $1 billion annually on media advertising (Hurtz, Henriksen, Wang, Feighery, & Fortmann, 2007) and although alcohol companies claim their advertising merely aims to convince drinkers to switch brands rather than to attract new drinkers (Kelly & Edwards, 1998), it is clear that youth are getting the message as well. Slater et al. (1996) found that adolescents who viewed a series of alcohol ads judged at least a portion of the featured drinkers

as underage and are thus quick to draw comparisons between themselves and the people in the ads.

Alcohol companies can insist that the effect of their advertising on teenagers is out of their control, but they cannot deny that some of their advertising methods appear to specifically target youth. The number of alcohol advertisements run during adult-oriented television increases for programs that appear to be popular with adolescents (Chung et al., 2010). The possession of merchandise with alcoholic messages is directly related to experimental drinking in teens, and adolescents show a preference for merchandise that incorporates alcohol logos (Hurtz et al., 2007).

Not only does alcohol advertising bombard youth, but these ads are also tailored to make drinking appear glamorous and sexy. Alcohol ads often feature drinkers at exciting parties and living high-end lifestyles—an alluring image for thrill-seeking teens (Slater, Rouner, Beauvais, & Murphy, 1996). Male adolescents in particular seem susceptible to these types of ads, most likely because of the attractive female models these ads feature (Kelly & Edwards, 1998). Clearly alcohol companies are making a specific effort to win the affection of the underage crowd.

Perhaps by taking some responsibility for their actions, these companies can assist in the effort to protect teens from developing drinking habits. The reduction of alcohol advertising targeting teenagers would be significant in preventing problem drinking from developing. Projective studies suggest that cutting down the amount of alcohol advertising by 25% could result in about a 5% decrease in adolescent alcohol consumption (Saffer & Dave, 2006). When placed in the context of a country where the majority of teenagers are drinking, it is imperative that companies that produce and promote alcohol are informed of their role in teenage drinking and encouraged to take action against it.

Suggestions for Further Research

This review examines a wide range of evidence that social factors are contributing to teenage drinking. However, there is still a great deal of work to be done on the subject. The extent to which social attitudes and pressures are responsible for problem drinking in adolescents is largely unclear, and it is possible there are many other social factors that require some attention in order to fully understand the issue.

Cross-cultural studies on teenage drinking would be invaluable in exposing the impact of social attitudes and pressures. These social factors vary between nations and cultures, and it would be expected that adolescent drinking habits and motives would vary as well. Gathering data about social factors and teenage drinking from a variety of cultures would greatly increase insight into the connection between these two domains.

Further study could also focus on the effects of different types of media advertising on the perpetuation of adolescent drinking. Most research has focused mainly on the implications for print and television alcohol advertisements, but these forms of media are now being overshadowed by more popular sources, such as the Internet. Specific research on the impact of online advertising would be relevant in identifying the effectiveness of alcohol advertising on the teenage audience.

The social attitudes of permissiveness and parental enabling, as well as the pressures exerted by peers and the media, are responsible for promoting problem drinking behaviors in adolescents. By identifying and understanding these social factors, there is hope that parents and professionals can prevent these issues and assist adolescents in overcoming the social atmosphere that enables their participation in problem drinking. Further research is necessary to more deeply examine

the relationship between social factors and teenage drinking, with the goal being prevention of problem drinking behaviors.

References

Adams, Z. W., Kaiser, A. J., Lynam, D. R., Charnigo, R. J., & Milich, R. (2012). Drinking motives as mediators of the impulsivity-substance use relation: Pathways for negative urgency, lack of premeditations, and sensation seeking. *Addictive Behaviors*, 37, 848-855.

Arnett, J. (1995). The young and the reckless: Adolescent reckless behavior. *Current Directions in Psychological Science*, *4*(3), 67-71.

Baker, J. O. (2010). The expression of low self-control as problematic drinking in adolescents: An integrated control perspective. *Journal of Criminal Justice*, *38*(3), 237-244.

Beck, K. H., & Lockhart, S. J. (1992). A model of parental involvement in adolescent drinking and driving. *Journal of Youth and Adolescence*, *21*(1), 35-35.

Blumenthal, H., Leen-Feldner, E. W., Frala, J. L., Badour, C. L., & Ham, L. S. (2010). Social anxiety and motives for alcohol use among adolescents. *Psychology of Addictive Behaviors*, *24*(3), 529-534.

Bot, S. M., Engels, R. C. M. E., Knibbe, R. A., & Meeus, W. H. J. (2007). Pastime in a pub: Observations of young adults' activities and alcohol consumption. *Addictive Behaviors*, 32, 491-504.

Chung, P. J., Garfield, C. F., Elliot, M. N., Ostroff, J., Ross, C., Jernigan, D. H., Vestal, K. D., & Shuster, M. A. (2010). Association between adolescent viewership and alcohol advertising on cable television. *American Journal of Public Health*, *100*(3), 555-562.

Coker, J., & Borders, L. (2001). An analysis of environmental and social factors affecting adolescent problem drinking. *Journal of Counseling & Development*, *79*(2), 200-208.

Davies, N. J. (2012). Alcohol misuse in adolescents. *Nursing Standard*, *26*(42), 43-48.

Duangpatra, K. N. K., Bradley, G. L., & Glendon, A. I. (2009). Variables affecting emerging adults' self-reported risk and reckless behaviors. *Journal of Applied Developmental Psychology*, *30*(3), 298-309.

Fingerman, K. L., Cheng, Y., Wesselmann, E. D., Zarit, S., Furstenberg, F., & Birditt, K. S. (2012). Helicopter parents and landing pad kids: Intense parental support of grown children. *Journal of Marriage and Family*, *74*(4), 880-896.

Haase, C. M. & Silbereisen, R. K. (2011). Effects of positive affect on risk perceptions in adolescence and young adulthood. *Journal of Adolescence*, 34, 29-37.

Hurtz, S. Q., Henriksen, L., Wang, Y., Feighery, E. C., & Fortmann, S. P. (2007). The relationship between exposure to alcohol advertising in stores, owning alcohol promotional items, and adolescent alcohol use. *Alcohol & Alcoholism*, *42*(2), 143-149.

Kelly, K. J., & Edwards, R. W. (1998). Image advertisements for alcohol products: Is their appeal associated with adolescents' intention to consume alcohol? *Adolescence*, *33*(129), 47-59.

Kobus, K., & Henry, D. B. (2010). Interplay of network position and peer substance use in early adolescent cigarette, alcohol, and marijuana use. *The Journal of Early Adolescence*, *30*(2), 225-245.

Lakon, C. M., & Valente, T. W. (2012). Social integration in friendship networks: The synergy of network structure and peer influence in relation to cigarette smoking among high risk adolescents. *Social Science and Medicine*, *74*(9), 1407-1417.

Larsman, P., Eklöf, M., & Törner, M. (2012). Adolescents' risk perceptions in relation to risk behavior with long-term health consequences; antecedents and outcomes: A literature review. *Safety Science*, *50*(9), 1740-1748.

Litt, D. M., Stock, M. L., & Lewis, M.A. (2012). Drinking to fit in: Examining the need to belong as a moderator of perceptions of best friends' alcohol use and related risk cognitions among college students. *Basic and Applied Social Psychology*, *34*(4), 313-321.

Lynch, S., Hurford, D. P., & Cole, A. (2002). Parental enabling attitudes and locus of control of at-risk and honors students. *Adolescence*, *37*(147), 527-549.

Nanda, M. M., Kotchick, B. A., & Grover, R. L. (2012). Parental psychological control and childhood anxiety: The mediating role of perceived lack of control. *Journal of Child and Family Studies*, *21*(4), 637-645.

Parada, M., Corral, M., Mota, N., Crego, A., Rodríguez Holguín, S., & Cadaveira, F. (2012). Executive functioning and alcohol binge drinking in university students. *Addictive Behaviors*, *37*(2), 167-172.

Reis, J., & Trockel, M. (2003). An empirical analysis of fraternity and sorority individual environmental interaction with alcohol. *Journal of Applied Social Psychology*, *23*(12), 2536-2552.

Saffer, H., & Dave, D. (2006). Alcohol advertising and alcohol consumption by adolescents. *Health Economics*, 15, 617-637.

Saucier, G. (2000). Isms and the structure of social attitudes. *Journal of Personality and Social Psychology*, 78(2), 366-385.

Slater, M. D., Rouner, D., Beauvais, F., & Murphy, K. (1996). Adolescent perceptions of underage drinkers in TV beer ads. *Journal of Alcohol and Drug Education*, *42*(1), 43-56.

Terry, D. J., & Hogg, M. A. (1996). Group norms and the attitude-behavior relationship: A role for group identification. Personality and Social *Psychology Bulletin*, *22*(8), 776-793.

Theakston, J. A., Stewart, S. H., Dawson, M. Y., Knowlden-Loewen, S. A. B., & Lehman, D. R. (2004). Big-Five personality domains predict drinking motives. *Personality and Individual Differences*, 37, 971-984.

Tomlinson, K. L., & Brown, S. A. (2012). Self-medication or social learning? A comparison of models to predict early adolescent drinking. *Addictive Behaviors*, 37, 179-186.

Brainwaves and Neurofeedback

Understanding and Treating Brain Dysregulation in ADHD

by JoAnna Burton

Neurons communicate with each other through electrochemical signals which can be measured as wave-like patterns. The brain typically uses cues from the environment to regulate these brainwave patterns. Yet overly dominant or other dysfunctional patterns may produce brainwave dysregulation and accompanying behavioral problems. Brainwave dysregulation is detected through indications of abnormal brainwave ratios as measured by EEG equipment. Neurofeedback is a form of biofeedback that allows individuals to change deregulated brainwave rhythms (biofeedback is a type of alternative medicine that trains patients to regulate internal processes using operant conditioning). Neurofeedback has proven to be an effective treatment for those with ADHD. ADHD is one of the most commonly diagnosed disorders among younger populations. Individuals with ADHD are often in a state of

under-arousal and must use hyperactive movement to keep up with events in their surroundings (which may be in part due to brainwave dysregulation). In comparison to other treatments, neurofeedback can be remarkably beneficial to individuals with brainwave dysregulation while causing few or no side-effects.

Neurofeedback, a relatively new area of study, is a form of biofeedback that allows individuals to change deregulated brainwave rhythms (Myers & Young, 2012). Biofeedback is a type of alternative medicine that trains patients to regulate internal processes using operant conditioning (Frank, Khorshid, Kiffer, Moravec & McKee, 2010). Feedback from physiological processes is delivered to the patient in the form of visual or auditory cues (or both). Patients can learn to visualize the relationship between mental control and physiological processes. Doing so may aid in their recovery from disorders caused by brainwave deregulation.

Typically, sophisticated computerized electroencephalography (EEG) workstations are used to compare theta-wave and beta-wave ratios (Hill & Castro, 2009). If abnormal ratios are indicated, or if particular brainwaves are improperly dominant, neurofeedback may be prescribed as treatment.

Neurofeedback can be remarkably beneficial to individuals with brainwave dysregulation while causing few or no side-effects (Hill & Castro, 2009). Other treatments, such as medication or various types of psychotherapy, can be costly or even risky. In contrast, neurofeedback may provide safer, cheaper, and more efficient treatment. In particular, I will examine the benefits of using neurofeedback in treating brainwave dysregulation in individuals with Attention deficit hyperactivity disorder (ADHD).

Brainwaves

Neurons communicate with each other through electrochemical signals (Heraz & Frasson, 2011). When many neurons fire, the accumulation of these signals can be measured as wave-like activity using an EEG device (Heraz & Frasson, 2011). The wave patterns emerge from the constant hyperpolarization and depolarization of the neuronal membranes (Kropotov, 2009). The more energetic the membranes - that is, the faster the underlying neurons are stimulated - the higher the frequency (and possibly the amplitude) of the wave. Frequencies are divided into five main types: delta (1-4 Hz), theta (4-8 Hz), alpha (8-12 Hz), beta (12-25 Hz), or gamma (25-100 Hz; see Heraz & Frasson, 2011). The state of the brain is associated with these different types of brainwave frequencies.

Delta and theta waves are associated with lower physical activity. Delta waves are usually recorded during sleep, are associated with improving the immune system, and are related to slow metabolic processes (Heraz & Frasson, 2011; Kropotov, 2009). Theta waves may be recorded while dreaming during sleep, during moments of deep relaxation, or during moments of increased creativity (Heraz & Frasson, 2011). Alpha waves are present during relaxed consciousness (usually when the eyes are closed) and have been associated with feelings of well-being (Kropotov, 2009; Saxby & Peniston, 1995). Furthermore, beta waves have the highest frequency wave. Beta waves are divided into two bands: low beta (13-20 Hz) and high beta (21-30 Hz; see Heraz & Frasson, 2011). Beta waves have been found to be associated with an alert mind and high concentration (Heraz & Frasson). Not only are brainwaves associated with states of mind and body, they are associated with emotion. For instance, gamma waves appear during meditation and have been linked to "feelings of satisfaction, gratitude, compassion, and love" (Rubik, 2011, p. 110).

Multiple types of waves may be present at one time within the brain. Yet brainwave patterns may become dominant. Should it persist (that is, should the brain be "parked" in one type of brainwave) behavioral dysfunction may occur (Hill & Castro, 2009). Therefore, excessively dominant brainwave patterns may cause dysfunction.

Dysregulation can also occur when brainwaves fail to adapt to the context (Hill & Castro, 2009). When the task at hand requires strict focus, high-frequency wave patterns typically appear. On the contrary, when the brain emits a low-frequency pattern, the individual may feel sleepy or have a hard time focusing. Problems may arise when the brain is emitting low-frequency patterns when in a context where high focus is required. This dysregulation can produce agitated behavior, over- or under-arousal, and has even been linked to problems such as bed wetting and nightmares (Hill & Castro, 2009). Hence, brainwave dysregulation can influence behavior and health.

Neurofeedback

As already noted, clinicians have developed neurofeedback in order to regulate brainwaves. Robbins (2008) invited readers to: "Imagine a simple procedure versatile enough to treat epilepsy, autism, and attention deficit disorder, addictions, and depression without drugs, surgery, or side effects. These are only some of the capabilities of neurofeedback" (as cited in Myers & Young, 2012, p. 20).

To determine whether or not neurofeedback treatment should be prescribed, clinicians first place EEG electrodes on the scalp in order to measure brainwave patterns (Hill & Castro, 2009). Next, the obtained EEG data are analyzed as ratios (for example, the ratio of theta to beta activity is compared). A normal theta to beta ratio in adults is 1-1.15 to 1.0 (children normally have higher ratios). Adults with brainwave dysregulation may have ratios as high as 2 to 1 or 4 to 1 (Hill & Castro,

2009). Thus, brainwave dysregulation is detected in abnormally high or low ratios of brainwaves.

ADHD and Neurofeedback

ADHD is the disorder most commonly diagnosed among younger populations (Gevensleben et al., 2009). Usually, ADHD includes "inappropriate levels of inattention, impulsiveness and hyperactivity" (p. 780). ADHD can interfere with academic development and social relationships (Gevensleben et al., 2009). People with ADHD are often in a state of under-arousal and must use hyperactive movement to keep up with events in their surroundings (Hill & Castro, 2009).

Medication is a common and effective treatment for ADHD, but it can cause side effects including loss of appetite, sleep problems, and stunted growth (Lansbergen, Dongen-Boomsma, Buitelaar, & Slaats-Willemse, 2011). Thus, neurofeedback can be safer (Myers & Young, 2012). Specifically in cases of ADHD, it may be used to train individuals to increase their brainwave frequencies to a level appropriate to the current situation (Hill & Castro, 2009).

Brainwave activity (recorded by EEG equipment) can generate visual and auditory feedback from a monitor. Initially, patients are asked to relax and to focus on the monitor in order to play a video game without using a controller. The game provides feedback according to the patient's brainwave pattern. Individuals are rewarded for closer and closer approximations to the desired pattern (Druic, Assmus, Gundersen, & Elgen, 2012).

Hill and Castro (2009) described a video game in which the patients guide a large dot that eats smaller dots. When the patient's EEG data show an approximation to the proper brainwave pattern (for example, one that is indicative of staying focused) points are awarded. To complete the task at hand (get a high score on the game) the patient learns to manipulate his or her brainwaves (Hill & Castro, 2009). Over

multiple sessions (usually 20-40 sessions), patients gradually change their brainwaves and maintain the desired pattern (Hill & Castro, 2009).

To test whether or not proper brain areas are being correctly targeted, self-reports are filled out by patients (or their parents) which identify behavioral changes (Hill & Castro, 2009). Different areas of the brain can be targeted and trained by changing the position of the electrodes on a patient's head (Hill & Castro, 2009). Because of the specificity of the areas of the brain to be targeted, neurofeedback must be tailored for individual patients (Hill & Castro, 2009).

Neurofeedback has demonstrated a 60% to 80% success rate (Myers & Young, 2012). It is relatively inexpensive, reduces the need for medication, and may enhance self-confidence (Hill & Castro, 2009). Hill and Castro (2009) shared the following example: Otis, an 11-year-old with ADHD, was producing eight times as many sleep waves (theta) as faster waves (beta). He had major behavioral problems, including difficulties in school and with relationships. After session 22 of neurofeedback, his brainwave ratio decreased from 4.6 to 1.0, and his behavior had greatly improved. After 40 training sessions, Otis's ADHD symptoms were significantly reduced. He was able to discontinue treatment, and he was still doing well a year later.

Future Research

Future research may lead to new techniques for more specifically targeting brain regions. Such research may address a related question: Does neurofeedback change other aspects of brain functioning aside from brainwaves?

Also, extending the use of neurofeedback to individuals without brainwave dysfunction may prove valuable. Neurofeedback could increase performance, including higher cognitive functioning, such as

more intense or more sustained focus, thereby improving efficiency and brain health for all individuals.

Conclusion

Brainwave dysregulation can negatively influence an individual's well-being and health by affecting behaviors, feelings, and attitudes (Hill & Castro, 2009). The brain uses cues from the environment to regulate brainwave patterns. Overly dominant or other dysfunctional patterns may produce brainwave dysregulation and accompanying behavioral problems.

Neurofeedback has been shown to be effective in treating individuals with ADHD. Feedback is provided in the form of video games connected to devices that monitor EEG data (Druic et al., 2012), whereby this technique positively reinforces the proper brainwave display.

Not only is neurofeedback safer when compared to the side effects of medication, but it can also empower its users by providing greater control over their bodies and their environments. Therefore, through targeting brainwave dysregulation, neurofeedback can safely and effectively improve individuals' lives.

References

Frank, D. L., Khorshid, L., Kiffer, J. F., Moravec, C. S., & McKee, M. G. (2010). Biofeedback in medicine: Who, when, why and how? *Mental Health Family Medicine*, *7*(2): 85–91. Retrieved from http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2939454/

Gevensleben, H., Holl, B., Albrecht, B., Vogel, C., Schlamp, D., Kratz, O., & . . . Heinrich, H. (2009). Is neurofeedback an efficacious treatment for ADHD? A randomized controlled clinical trial. *Journal of Child Psychology and Psychiatry*, *50*(7), 780-789. doi:10.1111/j.1469-7610.2008.02033.x

Heraz, A., & Frasson, C. (2011). Towards a brain-sensitive intelligent tutoring system: Detecting emotions from brainwaves. *Advances in Artificial Intelligence*, 1-13. doi:10.1155/2011/384169

Hill, R. W., & Castro, E. (2009*). Healing young brains: Drug-free treatment for childhood disorders - including autism, ADHD, depression, and anxiety*. Charlottesville, VA: Hampton Roads Pub. Co.

Kropotov, J. D. (2009). *Quantitative EEG, event-related potentials and neurotherapy*. Oxford, UK: Elsevier Inc.

Lansbergen., M. M, Dongen-Boomsma, M. V., Buitelaar., J. K., & Slaats-Willemse, D. (2011). ADHD and EEG-neurofeedback: A double-blind randomized placebo-controlled feasibility study. *Journal of Neural Transmitters*, *118*(2): 275–284. doi: 10.1007/s00702-010-0524-2

Myers, J. E., & Young, J. (2012). Brain wave biofeedback: Benefits of integrating neurofeedback in counseling. *Journal of Counseling & Development*, *90*(1), 20-28. doi: 10.1111/j.1556-6676.2012.00003.x

Rubik, B. (2011). Neurofeedback-enhanced gamma brainwaves from the prefrontal cortical region of meditators and non-meditators and associated subjective experiences. *Journal of Alternative & Complementary Medicine*, *17*(2), 109-115. doi: 10.1089/acm.2009.0191

Saxby, E., & Peniston, E. G. (1995). Alpha-theta brainwave neurofeedback training: An effective treatment for male and female alcoholics with depressive symptoms. *Journal of Clinical Psychology*, *51*(5), 685-693. doi:10.1002/1097-4679(199509)51:5<685::AID-JCLP2270510514>3.0.CO;2-K

Music Therapy for Intimate Partner Abuse

by Faith Yingling

Intimate partner abuse (IPA) affects as many as 1.5 million U.S. women annually. The most notable psychological effects include depression and stress. Related effects of stress include anxiety and post-traumatic stress disorder (PTSD). Women with a history of IPA may experience impaired physical health as well. Treatments for these symptoms often have harmful side effects. Music therapy is an option for many victims, given its positive effects on stress and anxiety. Despite the deep connection between stress and depression, there is little published research on the effects of music therapy on depression. Thus providing an incentive for further research in this area.

Media continually reports robberies, kidnappings, scandals, and innocent deaths that are common to everyday life. Unfortunately, the abuse of children and the elderly is also commonplace. Abuse often occurs under the threat of retribution. In essence, if the victim were ever to report it, the abuser hurts him or her even more. This may cause abused persons to believe that they are stuck in the situation of abuse. As a result, they may never seek any help.

One young woman ("Not So Perfect," 2012) was brave enough to report her experience with an abusive ex-boyfriend. She wrote:

> I told myself he didn't mean it and that I was the person in the wrong. As time grew on and I tried harder to be perfect for him, I fell into an eating disorder. I was worried of losing him and I wanted to have a body that he wanted me to have…As time went on I…realized that anything I said or did wrong could get me into…trouble. One day when I didn't do something to his standards…he beat me so bad I believed he was going to kill me. [Eventually,] I made the choice to leave him and I told myself before I shut the door that I was never going to look back.

This horrific experience is representative of what women go through all over the world. Intimate partner abuse (IPA) loosely refers to threats or abuse (or both) inflicted upon an individual physically, emotionally, financially, or sexually by past or present male partners (Blasco-Ros, Sanchez-Lorente & Martinez, 2010). The National Women's Health Information Center further specifies that the abuser is most often a husband, boyfriend, or male significant-other from a former relationship (Teague, Hahna & McKinney, 2006).

In the United States, an estimated 1.5 million women are victims of IPA annually (Olson et al., 2003). Moreover, an estimated 22% of women have experienced IPA at one point in their lives. Of the women

who end up leaving their abusive relationship, 78% of them eventually return to it (Olson et al., 2003). However, although the majority of victims do return to their former abusive partner, most, after having initially left an abusive relationship, now view their situation more promisingly—in that it likely will not become what it was previously (Martin et al., 2000). These women consider themselves independent and strong, ready to begin a new life. When they do not conform to their abusive partner's desires, they are punished, often by death. In 2000, 1,247 women were killed by their intimate male partner. Furthermore, about one-half of them were killed after they had already left the situation (Teague et al., 2006).

As a result of the intimate relationship between the abuser and the victim, many more detrimental side effects accompany IPA than other forms of abuse. These effects are more psychological and include depression and stress. The latter includes anxiety and post-traumatic stress disorder (PSTD; Blasco-Ros et al., 2010). Among the physical symptoms of stress, as specified by Woods, Hall, Campbell, and Angott (2008), are back and muscle pains, fatigue and muscle weakness, heart and stomach problems, and sleep difficulties. These symptoms can be successfully treated with medications.

The most commonly used medications for PTSD are antidepressants such as Prozac, Zoloft, and Paxil. These medications have a long list of side effects, including weight gain, heart problems in the elderly, heart-related birth defects in pregnant women, and kidney and liver damage (Simon, 2012). Additional side effects can include restlessness, persistent headaches, gastric distress, dehydration, and anxiety (Mohammadi, Shahabi, & Panah, 2011). As an alternative to medications, therapy is a risk-free option for many people and has been shown to have positive effects on reducing stress levels, anxiety levels, and symptoms of depression. Furthermore, other studies have found

that veterans suffering from PTSD prefer psychotherapy rather than medication (Reger et al., 2012; Najavits, 2011).

Music therapy could provide an alternative to psychotherapy and medication. It includes a variety of musical activities such as singing songs, analyzing music, playing instruments, directing music, and writing songs. It can be used in group or individual settings. Choi, Lee, and Lim (2008) also reported that music therapy has a significant effect in reducing anxiety and tension, and in strengthening self-confidence and mood. These findings suggest a positive correlation between music therapy and stress reduction. Furthermore, when a woman with a history of IPA reports experiencing stress or related effects, she almost always struggles with depression as well. Interestingly, there is a relatively small amount of research on music therapy and its effects on depression despite the connection between the two symptoms. The purpose of this review is to examine the relationship between music therapy and the reduction of stress, anxiety, and depression in women who have suffered IPA.

Effects of Stress and Anxiety in Victims of IPA

Stress is a normal part of everyday life. It may result from stressors such as a school assignment, a fading relationship, or loss of income. Sutherland, Bybee, and Sullivan (2002) found that stress contributed to 80% of causes that negatively affected women's health. Although extreme forms of stress can have negative effects, the human body is designed to react to it. For example, positive stress can keep individuals alert in the face of danger, giving them the ability to either fight or flee (Bracha, 2004). It is when it is experienced without relaxation periods that it can have damaging effects. Some of these symptoms include persistent headaches, disrupted sleeping patterns, elevated blood pressure, and anxiety (Blasco-Ros et al., 2010).

Anxiety is possibly the most commonly felt and acknowledged symptom of stress. Although mild anxiety is common and is usually not cause for concern, extreme anxiety may come in various forms of psychopathology, such as panic disorder, phobias, social anxiety disorder, obsessive-compulsive disorder, or PTSD. Most people associate PTSD with war victims or veterans. However, it can also afflict victims of crime, such as rape or abuse. Nightmares and flashbacks are common symptoms of this disorder and can result in social withdrawal or isolation. Chronic PTSD can result in cardiovascular, respiratory, gastrointestinal, and musculoskeletal diseases (Woods et al., 2008).

Women who have experienced IPA may also suffer from PTSD. In fact, numerous researchers have investigated the correlation between these two variables. Hernández-Ruiz (2005) found that victims of IPA also may exhibit symptoms of PTSD—flashbacks, anxiety, and sleep disturbances. Another study (Woods et al., 2008) found that IPA victims report a significantly higher incidence of chronic diseases associated with persistent PTSD, with symptoms ranging from mild to severe.

Some research done on PTSD suggests that all types of abuse, from psychological to physical, lead women to have greater symptoms of PTSD as well as depression. Sutherland and colleagues (2002) studied 397 abused women who had suffered IPA and found that financial and relationship problems were frequent stressors that were affecting their lives. Of the women that were studied, 63% of them were at least mildly depressed. Overall, 14% had mild depression, 19% had moderate depression, and 30% of abused women were rated as having severe depression (Sutherland et al., 2002). In another study (Olson et al., 2003) of 58 women IPA victims, adult physical abuse and the relation to depression was analyzed. A positive significant correlation

was present, which means that those who reported with physical trauma were in deed symptomatic for moderate-to-severe depression. These studies connect depression and anxiety by showing that the correlation results between adult abuse and anxiety are similar to those found for depression and abuse (Olson et al., 2003). Anxiety and stress levels have been adequately shown to increase in women in abusive relationships. This could well mean that abused women suffering from depression could also see a decrease in symptoms of depression if they utilized music therapy.

Music Therapy for Stress

Music therapy encourages patients to express their feelings and emotions by means of music (Choi et al., 2008). Music therapy integrates all aspects of music, including listening, singing, and other rhythm-centered activities. It may involve playing instruments such as keyboards, bells, or drums. It may also include song writing or music directing. Additionally, music therapy is not accomplished with a single session. Rather, it continues until the therapist believes that the patient no longer needs it or no longer wants it. Music therapists have shown that combining lyric- and music-writing can boost abused women's self-esteem, helping them express their feelings, forgive themselves and their perpetrators, and eventually allow them to resolve their pasts (Curtis, 2000).

Research studies have explored the relationship between stress, anxiety, and music therapy as a form of treatment. In one study (Choi et al., 2008), after 15 60-min music- therapy sessions, psychiatric patients' feelings of self-confidence and self-worth increased significantly. Brain images showed that music therapy deactivated brain areas associated with anxiety and activated other regions of the brain in patterns correlated with a shift in mood and lower anxiety. Mohammadi et al. (2011) reported a study of elderly Persian-American

residents in a nursing home who received music therapy by playing instruments, engaging in rhythmic movement, and reminiscing by singing Persian songs. The researchers reported significant decreases in anxiety, depression, and stress. Another study conducted on 57 seemingly healthy college students found that participating in creating activities, specifically piano playing, is effective in lowering levels of cortisol, which has been medically proven to be a major physiological factor in stress (Toyoshima, Fukui, & Kuda, 2011). These studies were done on a specific population, but it can be suggested that music therapy in general could also have an effect on other factors like depression applied to a more specific population—abused women.

Effects of Music Therapy on Stress, Anxiety, and Depression in Abused Women

Hernández-Ruiz (2005) studied the positive effects on the sleep patterns in women recovering from abusive relationships. Half of the 28 women in the study listened to music. They reported a significant increase in sleep quality compared to those who had not listened to music. Additionally, the study found that those in the treatment group fell asleep more easily and stayed asleep longer than those in the control group did. The author suggested that music gave the women something to focus on, thus distracting them from stressful thoughts. Women victimized in abusive relationships also may develop a sense of hopelessness. Curtis (2000) introduced a feminist music therapy that included listening to various genres of empowering music as well as song writing. Participants reported feeling more confident to change their situation and the way they thought about themselves, and to help others.

Music therapy appears to have positive effects on women in abusive relationships when they are experiencing stress and anxiety. However,

one important aspect of these studies is that all of these symptoms—PTSD, anxiety, and stress—are all closely related to depression, a condition that is equally as harmful but studied less frequently. Some common symptoms include insomnia, muscle and head pain, and fatigue. Similarly, these same symptoms are known causes for depression. Additionally, a lack of support from the community, stressful life experiences, relationship and financial problems, early childhood trauma or abuse, or health problems are all similar life causes for depression, stress, and anxiety. These symptoms can be generalized to the stress accumulated in women with a history of IPA. It would be safe to assume that because music therapy has had a trend in improving stress symptoms in abused women, then it would benefit women with depression as well. However there is a scarce amount of research done on depression, which neither proves nor disproves this hypothesis. Nevertheless, this does not mean that there is no proof that would suggest that music therapy would indeed help decrease depression in abused women.

Limitations and Future Directions

Further research is this area is needed, but there are many limitations. One limitation is that most women in abused shelters have had little to no college schooling. This lack of education leads to low financial income and less knowledge on options available. As these women attempt to deal with financial daily stressors as well as an abusive relationship, it can cause both mental and physical damage. As a result of their mental and financial inadequacies, they tend to be either unemployed or unable to maintain a job. For these reasons, they are less likely to resort to music therapy as a treatment because it requires more of an initial financial investment and they are not aware that it is an option.

As the amount of research increases, availability for treatment also increases. Consequently, the benefits of music therapy will be better known resulting in more government funding, private donations, and more educational opportunities to become music therapists. This will provide greater opportunities for women from abusive relationships to find effectual relief from stress and depression.

References

Blasco-Ros, C., Sanchez-Lorente, S., & Martinez, M. (2010). Recovery from depressive symptoms, state anxiety and post-traumatic stress disorder in women exposed to physical and psychological, but not to psychological intimate partner violence alone: A longitudinal study. *BMC Psychiatry*, 10, 1-12. doi:10.1186/1471-244X-10-98

Bracha, H.S. (2004). Freeze, flight, fight, fright, faint : Adaptionist perspectives on the acute stress response spectrum. *CeNS Spectrums : The International Journal of Neuropsychiatric Medicine*, 9, 679-685.

Choi, A., Lee, M., & Lim, H. (2008). Effects of group music intervention on depression, anxiety, and relationships in psychiatric patients: A pilot study. *The Journal of Alternative and Complementary Medicine*, *14*(5), 567-570. doi:10.1089/acm.2008.0006

Curtis, S. L. (2000). Singing subversion, singing soul: Women's voices in feminist music therapy. (Doctoral dissertation, Concordia University, 1997). *Dissertation Abstracts International, 60*(12-A), 4240.

Hernández-Ruiz, E. (2005). Effect of music therapy on the anxiety levels and sleep patterns of abused women in shelters. *Journal of Music Therapy*, *42*(2), 140-158.

Martin, A. J., Berenson, K: R.,Griffing, S:, Sage, R. E., Madry, LI, Bingham, L. E., & Primm, B.J. (2000). The process of leaving an abusive relationship: The role of risk assessments and decision-certainty. *Journal of Family Violence*, 15, 109-122.

Mohammadi, A., Shahabi, T., & Panah, F. (2011). An evaluation of the effect of group music therapy on stress, anxiety, and depression levels in nursing home residents. *Canadian Journal of Music Therapy*, *17*(1), 55-68.

Najavitis, L. M. (2011). Treatments for PTSD and pathological gambling: What do patients want? *Journal of Gambling Studies*, 27(2), 229-241. doi:10.1007/s10899-010-919 8-9

Not So Perfect Person (2012, October 03). [Web log comment]. Retrieved from http://www.experienceproject.com/stories/Was-In-An-Emotionally-Abusive-Relationship/2616201

Olson, B. D., Curtis, E.E., Jason, L.A., Ferrari, J.R., Horin, E. V., Davis, M. I., & …Alvarez, J. (2003). Physical and sexual trauma, psychiatric symptoms, and sense of community among women in recovery: Toward a

new model of shelter aftercare. *Journal of Prevention & Intervention in the Community*, *26*(1), 67-80. doi:10.1300/J005v26n01_06

Reger, G. M., Durham, T. L., Tarantino, K. A., Luxton, D. D., Holloway, K. M., & Lee, J. A. (2012, August 6). Deployed soldiers' reactions to exposure and medication treatments for PTSD. *Psychological Trauma: Theory, Research, Practice, and Policy*. Advance online publication. doi:10.1037/a0028409

Simon, H. (2012, February 08). *Post-traumatic stress disorder*. New York Times. Retrieved from http://health.nytimes.com/health/guides/disease/post-traumatic-stress-disorder/medications.html

Sutherland, C. A, Bybee, D. L, & Sullivan, C. M. (2002). Beyond bruises and broken bones: The joint effects of stress and injuries on battered women's health. *American Journal of Community Psychology*, 30, 609-636.

Teague, A.K., Hahna, N. D., & McKinney, C. H. (2006). Group music therapy with women who have experienced intimate partner violence. *Music Therapy Perspectives*, *24*(2), 80-86.

Toyoshima, K., Fukui, H., & Kuda, K. (2011). Piano playing reduces stress more than other creative art activities. *International Journal Of Music Education*, *29*(3), 257-263. doi:10.1177/0255761411408505

Woods, S.J., Hall, R. J., Campbell, J.C., & Angott, D. M. (2008). Physical health and posttraumatic stress disorder symptoms in women experiencing intimate partner violence. *Journal of Midwifery & Women's Health*, *53*(6), 538-546. doi:10.1016/j.jmwh.2008.07.004

Effects of Botox Injections on Cognitive-emotional Experience

by Jennie D. Lakenan

Emotional experience is a complex neurological process highly dependent on the ability to express emotion behaviorally. Facial expression, specifically, plays a critical role in interpreting others' emotions and responding appropriately. This review examines the current literature about the impact of botox injections on emotional experience, including recognition and empathy. Results show that botox may severely limit cognitive-emotional responses to others' emotions, especially stronger emotions such as anger. This leads to the conclusion that botox injections may inhibit emotional connections to others.

Darwin (1872) was among the first to explore the "intimate relation which exists between almost all the emotions and their outward manifestations" (p. 366). Recent studies have confirmed this emotion-expression link and indicated that the ability to express emotion outwardly is essential for interpreting and empathizing with emotional stimuli (Havas, Glenberg, Gutowski, Lucarelli, & Davidson, 2010; Neal & Chartrand, 2011). In other words, cognitive-emotional experience is directly linked to the ability to display emotion through facial expression. Given this, one might ask about persons who cannot express emotion outwardly. Specifically, what effects do botox injections have on emotional experience?

Botox injections are a common cosmetic procedure for reducing facial wrinkles (Hexsel, Spencer, Woolery-Lloyd, & Gilbert, 2010). In the United States alone, the use of botox increased 8% in 2008 to 5 million injections per year. Botox is derived from a botulinum neurotoxin released by a spore-forming microbe that, in large doses, can cause paralysis and death (Hexsel et al., 2010). Though there are practical applications of botox in the treatment of neuromuscular diseases, the most frequent applications are cosmetic. Due to this broad use, the question of how botox injections affect emotional experience is potentially important emotionally and socially. This paper will briefly introduce the major pathways of cognitive emotion, describe the origins and cellular effects of the botulinum toxin, and examine botox's effects on cognitive-emotional experience.

Cognitive-emotional Experience

A basic understanding of the emotional pathways in the human brain is crucial to understanding the effect of botox on emotion. Cognitive emotion is defined here as the processes within the brain that allow the experience of emotion. One meta-analytic study (Lindquist, Wager, Kober, Bliss-Moreau, & Barrett, 2012) found little supporting

evidence for the "locationist" hypothesis of emotion, which holds that specific emotions are located in specific parts of the brain. Instead, the study postulated that emotions of all types draw from the entire brain, both in regions considered emotional in function and in other areas of the brain. For example, the amygdala, orbitofrontal cortex, and ventromedial prefrontal cortex are all involved in the basic emotional process of analyzing whether or not a stimulus is appealing (Barrett, Mesquita, Ochsner, & Gross, 2007). This evaluative process relies heavily on interactions between the hypothalamus and brainstem. Other parts of the brain are involved in more complex emotional processing, such as relating past experience to present emotional stimuli, including the medial prefrontal cortex and the anterior cingulate cortex (Barrett et al., 2007). The pathways contained in the human brain are extremely complex, depending on many different locations to convey even the simplest emotions.

Botulinum Neurotoxin

Botox injections are derived from the botulinum neurotoxin produced by Clostridium botulinum, an anaerobic, gram-positive, spore-forming bacterium found mainly in soil and animal intestinal tracts (Hexsel et al., 2010). The basic function of the neurotoxin at the cellular level is as an antagonist to the neurotransmitter acetylcholine, permanently preventing fusion of synaptic vesicles containing acetylcholine to the pre-synaptic cell, thereby preventing its release into the synaptic cleft (Hexsel et al., 2010; Nigam & Nigam, 2010).

In other words, the neurotoxin prevents neural transmission in cholinergic pathways in the peripheral nervous system. The neurotoxin is effective at four different sites in the body: the neuromuscular junction, autonomic ganglia, postganglionic parasympathetic nerve endings, and postganglionic sympathetic nerve endings (Nigam &

Nigam, 2010). Even in tiny, nanogram-level doses, botulinum neurotoxin can cause paralysis and death (Hexsel et al., 2010).

Two strains of neurotoxin currently exist in the United States (Hexsel et al., 2010). Type A is used for cosmetic purposes and Type B for neuromuscular diseases, such as hemifacial spasms and dystonia. Their effects generally last from three to six months (Hexsel et al., 2010). Although the toxicity of botulinum neurotoxin is high, the dosages used for so-called botox treatments are low enough to be relatively harmless in normal nerve cells (Nigam & Nigam, 2010). In fact, botox has been popularized as a cosmetic treatment that literally paralyzes facial muscles in an effort to obliterate wrinkles.

Impact on Facial Expression and Emotion

The comparative loss of facial expression in botox users has been documented and shown to play a critical role in how they interpret and empathize with the emotions of others. For example, Hennenlotter et al. (2009) utilized botox injections to investigate how feedback from facial muscles during the imitation of fear and anger affects activation of the amygdala. They found that the botox-injected group displayed no difference in activity during imitation of facial expressions of fear, but did show decreased activity during imitation of anger, illustrating the possible role that the ability to express emotion has on emotional intensity. Another study examined self-reported emotional responses to visual emotional stimuli (Davis, Senghas, Brandt, & Ochsner, 2010). Results showed that, for moderate emotional stimuli, the botox group reported a statistically significant decrease in their level of emotional experience (Davis et al., 2010).

Other studies have also examined the effects of botox-dampened facial expression on emotional perception. Havas et al. (2010) found that using botox injections to selectively paralyze facial muscles inhibited the speed that participants read passages depicting emotions

which are expressed through the use of the paralyzed muscles. Additionally, Neal & Chartrand (2011) discovered that administering botox injections resulted in a decreased ability to match facial expressions with corresponding emotions. The fact that brain activity and self-reported emotional responses are correlated supports a conclusion that cosmetic botox injections impair emotional experience.

A Suggestion for Future Research

There is little research on the effects associated with different botox-injection sites. Some are given in the corners of the mouth, others in the forehead, and others between the eyebrows (Davis et al., 2010). It could be that forehead injections result in weaker emotional experiences because forehead muscles are a large part of most facial expressions.

In summary, this paper has reviewed the major emotion pathways in the human brain involved in emotional processing, described the origins and cellular effects of botulinum neurotoxin, and surveyed studies of the impact of botox injections on cognitive-emotional experience. The results indicate that the dampening of facial expression by botox injections weakens the intensity of emotional experience. If the use of botox adversely affects the ability to feel emotion, then the rapid growth of the botox cosmetic industry may require further study of this unanticipated side effect.

References

Barrett, L. F., Mesquita, B., Ochsner, K. N., & Gross, J. J. (2007). The experience of emotion. *Annual Review of Psychology*, 58, 373–403. doi:10.1146/annurev.psych.58.110405.085709

Darwin, C. (1872). *The expression of the emotions in man and animals*. London, England: John Murray.

Davis, J. I., Senghas, A., Brandt, F., & Ochsner, K. N. (2010). The effects of BOTOX injections on emotional experience. *Emotion*, *10*(3), 433–440. doi:10.1037/a0018690

Havas, D. A., Glenberg, A. M., Gutowski, K. K., Lucarelli, M. J., & Davidson, R. J. (2010). Cosmetic use of botulinum toxin-a affects processing of emotional language. *Psychological Science*, *21*(7), 895–900. doi:10.1177/0956797610374742

Hennenlotter, A., Dresel, C., Castrop, F., Ceballos-Baumann, A. O., Baumann, A. O. C., Wohlschläger, A. M., & Haslinger, B. (2009). The link between facial feedback and neural activity within central circuitries of emotion--new insights from botulinum toxin-induced denervation of frown muscles. *Cerebral Cortex*, *19*(3), 537–542. doi: 10.1093/cercor/bhn104

Hexsel, D., Spencer, J. M., Woolery-Lloyd, H., & Gilbert, E. (2010). Practical applications of a new botulinum toxin. *Journal of Drugs in Dermatology*, *9*(3), 31–37.

Lindquist, K. A., Wager, T. D., Kober, H., Bliss-Moreau, E., & Barrett, L. F. (2012). The brain basis of emotion: A meta-analytic review. *Behavioral and Brain Sciences*, *35*(3), 121–202.

Neal, D. T., & Chartrand, T. L. (2011). Embodied emotion perception: Amplifying and dampening facial feedback modulates emotion perception accuracy. *Social Psychological and Personality Science*, *2*(6), 673–678. doi:10.1177/1948550611406138

Nigam, P. K., & Nigam, A. (2010). Botulinum toxin. *Indian Journal of Dermatology*, *55*(1), 8–14.

Submission Guidelines

Call for submissions for *Intuition*, BYU's undergraduate journal of Psychology.

Submissions should adhere to the following criteria:

- Submissions cannot have been accepted for publication elsewhere.
- Articles should be at least 1,000 words in length and conform to APA style.
- The preferred format is Microsoft Word. All graphics or photos should be high resolution (300 dpi).

Types of submissions accepted:

- Brief or extended reports of theoretical development or original research (or both) from any field of psychology.
- Topical reviews, book reviews, and essays.
- Creative works, including visual media for potential cover art and personal narratives related to research experience.

Please keep in mind:

- Submissions are accepted and processed year-round.
- Those who wish to submit any manuscripts, reviews, or creative works should send an email with an electronic copy of their work attached to byupsychjournal@gmail.com.
- Submissions will undergo a basic process of revision before an offer of acceptance is extended.
- If your submission is accepted, you will have the opportunity to collaborate with our editorial board. Publication in the journal is ultimately contingent upon your willingness to contribute to the revision and polishing of your own work.

Any questions, comments, or concerns may be directed to the Editor-in-Chief at byupsychjournal@gmail.com