

Bond University
Research Repository



Mood, alexithymia, dispositional mindfulness, sensitivity to reward and punishment, frontal systems functioning and impulsivity in clients undergoing treatment for substance use disorders

Lyvers, Michael F.; Hinton, Rachel; Edwards, Mark; Thorberg, Fred

Published in:
Drug and Alcohol Dependence

DOI:
[10.1016/j.drugalcdep.2014.09.428](https://doi.org/10.1016/j.drugalcdep.2014.09.428)

Licence:
CC BY-NC-ND

[Link to output in Bond University research repository.](#)

Recommended citation(APA):
Lyvers, M. F., Hinton, R., Edwards, M., & Thorberg, F. (2015). Mood, alexithymia, dispositional mindfulness, sensitivity to reward and punishment, frontal systems functioning and impulsivity in clients undergoing treatment for substance use disorders. *Drug and Alcohol Dependence*, 146, e188-e189.
<https://doi.org/10.1016/j.drugalcdep.2014.09.428>

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

For more information, or if you believe that this document breaches copyright, please contact the Bond University research repository coordinator.

Mood, Alexithymia, Dispositional Mindfulness, Sensitivity to Reward and Punishment, Frontal Systems Functioning and Impulsivity in Clients Undergoing Treatment for Substance Dependence

Michael Lyvers, Ph.D.; Rachel Hinton, M.A.; Stephanie Gotsis, PG Diploma; Michelle Roddy, PG Diploma; Mark S. Edwards, Ph.D.
 Department of Psychology, Bond University, Gold Coast, Queensland, Australia
 Fred Arne Thorberg, Ph.D.

Faculty of Medicine, University of Oslo, Oslo, Norway

Background: Neurobiological perspectives on addiction have emphasised the intertwined roles of (1) the subcortical dopaminergic reward system as a motivational driver of excessive substance use (Koob & LeMoal, 1997) and (2) prefrontal cortex dysfunction as the basis of the impaired self-control that characterises addictive behaviour (Lyvers, 2000). Traits presumed to reflect the functioning of these brain systems include reward sensitivity, presumed to index the motivational influence of the dopaminergic reward system, and traits such as rash impulsivity, disinhibition, executive deficit and alexithymia, all of which have been linked to inherent deficiencies of prefrontal cortex functioning as well as risky or problematic substance use (Dawe et al., 2004; Lyvers et al., 2012). Further, dispositional mindfulness has been suggested to protect against addictions, appears to reflect meta-cognitive functioning (Chambers et al., 2009) and is inversely related to impulsivity and other behavioural indices of frontal

systems dysfunction (Lyvers et al., in press). The present study compared residential addiction treatment in-patients to community controls on measures of the above traits, with the expectation that addicts and controls would differ on all measures. **Methods.** After excluding those with major psychiatric disorders, 100 residents of two therapeutic communities undergoing in-patient addiction treatment and 107 social drinker controls completed the following indices: *Depression Anxiety Stress Scales -21 (DASS-21;* Lovibond & Lovibond, 1995), *Frontal Systems Behavior Scale (FrSBe;* Grace & Malloy, 2001), *Sensitivity to Punishment and Sensitivity to Reward Questionnaire (SPSRQ;* Torrubia et al., 2001), *Mindful Attention Awareness Scale (MAAS;* Brown & Ryan, 2003), *Barratt Impulsiveness Scale (BIS-11;* Patton et al., 1995), *Toronto Alexithymia Scale-20 (TAS-20;* Bagby et al., 1994) as well as demographic items.

Results: Multivariate analysis of covariance (MANCOVA) controlling for age, education, previous serious head injury and gender revealed highly significant differences ($p < .0001$) between clinical and control groups on all dependent measures. The clinical group scored significantly higher on depression, anxiety, stress, alexithymia, frontal systems dysfunction, reward sensitivity, punishment sensitivity and impulsivity, and lower on dispositional mindfulness, than the control group. Time in treatment was significantly correlated only with levels of depression, anxiety and stress, supporting the relative stability of the trait measures. Group differences (all $p < .0001$) are shown in the following table.

	Addicts		Controls	
	M	SD	M	SD
DASS Depression	8.70	6.13	3.39	3.85
DASS Anxiety	6.40	5.04	2.87	3.13
DASS Stress	9.77	5.23	5.72	4.01
BIS-11 Total	75.28	13.06	69.40	6.27
Reward Sensitivity	14.49	4.88	11.23	4.15
Punishment Sensitivity	13.33	5.42	9.99	5.14
MAAS Mindfulness	50.45	14.30	58.66	12.21
FrSBe - Apathy	39.00	5.87	29.24	6.50
FrSBe - Disinhibition	42.22	8.24	32.26	6.63
FrSBe - Exec Dysfunction	46.58	8.38	37.45	8.16

Conclusions: Results are consistent with the notion that substance use disorders are linked to reward system and frontal lobe dysfunction and associated traits, although the current findings cannot determine whether such characteristics predated or post-dated disordered substance use.

References

- Bagby, R.M., et al. (1994). The twenty-item Toronto Alexithymia Scale: Item selection and cross-validation of the factor structure. *Journal of Psychosomatic Research, 38*, 23–32.
- Brown, K.W., & Ryan, R.M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality & Social Psychology, 84*, 822–848.
- Chambers, R., Gullone, E., & Allen, N.B. (2009). Mindful emotion regulation: An integrative review. *Clinical Psychology Review, 29*, 560–572.
- Dawe, S., et al. (2004). Reward drive and rash impulsiveness as dimensions of impulsivity: Implications for substance misuse. *Addictive Behaviors, 29*, 1389–1405.
- Grace, J. & Malloy, P. F. (2001). *Frontal Systems Behavioral Scale (FrSBe): Professional manual*. FL: PAR.
- Koob, G.F., & Le Moal, M. (1997). Drug abuse: Hedonic homeostatic dysregulation. *Science, 278*, 52–58.
- Lovibond, S.H., & Lovibond, P.F. (1995). *Manual for the Depression Anxiety and Stress Scales*. Sydney: Psychological Foundation.
- Lyvers, M. (2000). “Loss of control” in alcoholism and drug addiction: A neuroscientific interpretation. *Experimental and Clinical Psychopharmacology, 8*, 225–249.
- Lyvers, M., et al. (2012). Influences of rash impulsiveness and reward sensitivity on risky drinking in university students: Evidence of mediation by frontal systems. *Addictive Behaviors, 37*, 940–946.
- Patton, J.H., Stanford, M.S., & Barratt, E.S. (1995). Factor structure of the Barratt Impulsiveness Scale. *Journal of Clinical Psychology, 51*, 768–774.
- Torrubia, R., et al. (2001). The Sensitivity to Punishment and Sensitivity to Reward Questionnaire as a measure of Gray’s anxiety and impulsivity dimensions. *Personality & Individual Differences, 31*, 837–62.