



SCHOOL OF PSYCHOLOGY
DOCTORATE IN CLINICAL PSYCHOLOGY
LITERATURE REVIEW

Title: A Critical Review of the Literature that relates Temperament and Self-Control to Psychopathology

Trainee Name: Georgina Taylor

Supervisors –

Primary: Professor Tom Lynch, University of Southampton

Secondary: Dr Roelie Hempel, University of Southampton

Dr Heather O'Mahen, University of Exeter

Word Count: 3982

“This work has been submitted in partial fulfilment of a Doctoral degree in Clinical Psychology”.

List of Contents

Introduction to Topic Area.....	3
Rationale/Current Research Limitations.....	4
Treatment Resistant Depression and Personality Disorders.....	6
Temperamental Affectivity and Self-Regulation.....	8
Self-Regulatory Capacity and Psychological Functioning.....	11
Addressing the Clinical Issue of Control.....	13
Conclusions.....	16
Search Strategy.....	17
References.....	18

A Critical Review of the Literature that relates Temperament and Self-Control to Psychopathology

Introduction to the Topic Area

Treatment Resistant Depression (TRD) is a major public health problem that poses significant costs to society and an individual's health and wellbeing (Moussavi, Chatterji, Verdes, Tandon, Patel, & Ustun, 2007). The severity of the problem is highlighted by a projection made by the World Health Organisation that suggests by 2020 depression will be the second most frequent cause of disability worldwide (Murray & Lopez, 1997). TRD can be defined as depression that does not respond to available treatments and it is associated with poor medium to long-term outcomes for clients. Lynch, Hempel and Clark (in press) propose that existing psychosocial treatments are ineffective because they fail to take into account the high rate of comorbidity with certain Personality Disorders (PD). Indeed, evidence suggests that chronically depressed individuals display maladaptive coping styles that are characteristic of emotionally constricted PDs (Riso et al., 2003). Lynch, Hempel and Clark assert that these coping styles may interfere with treatments for an individual's depressive symptoms.

Based on their assertion and existing literature, Lynch, Hempel and Clark have developed a theoretically derived and targeted therapy for the treatment of TRD and chronic depression. This intervention is based on an untested, integrated model of psychopathology, which proposes that individual differences in Self-Regulatory Capacity¹ (SRC) mediate the effect of Temperamental Affectivity and Sociobiographic History (e.g., early childhood experiences) on psychological functioning (Lynch, Barnsley, Hempel & Clark in prep; see Appendix A). This innovative model is unique because unlike most research examining

¹ Within the literature, SRC is also referred to as self-control and coping styles (e.g., Baumeister, Heatherton & Tice, 1994). For ease of interpretation and consistent with Lynch, Barnsley, Hempel and Clark's work (in prep), throughout this review this construct will be referred to as SRC.

temperamental influences on the development of psychopathology it considers the potential mediating effect of individual differences in self-regulatory capacity (Bijttebier, Beck, Claes & Vandereycken (2009) and has been used as a rationale for the development of a new therapeutic intervention. Thus, despite the implicit interest and value in this novel therapy the model underpinning it has not been explored or empirically tested and is being used in a clinical trial before being validated. As such, the focus of the current review is twofold: First, in order to gain a clear rationale for the development of this novel intervention, a critical analysis of the literature that relates to and explains the development of the model underpinning it will be provided and second, implications of the model will be discussed.

Rationale/Current Research Limitations

To date, there are three interrelated problems with existing research on TRD and chronic depression. First, existing research into the treatment of TRD is not only limited but has severe methodological weaknesses. This was highlighted in a recent review of psychotherapy for TRD (McPherson, Cairns, Carlyle, Shapiro, Richardson & Taylor D, 2005) which highlighted that of the 12 existing studies; only four were controlled but had inadequate statistical power to detect key effects. Second, researchers have failed to adopt a consistent definition of TRD which has resulted in clinical studies varying in their interpretation of the concept. As a result, the majority of trials have excluded patients with comorbid personality disorder, suicidal behaviour, prior psychotherapy treatment, or frequent relapse which not only restricts the legitimacy of current research but means that most patients who would be classified as treatment-resistant by practitioners are not included in rigorous studies (Lynch, Hempel, Clark in press.) Third, most current treatments including treatment guidelines (e.g., the National Institute for Health and Clinical Excellence [NICE], 2007) focus on acute unipolar depression and fail to account for the differences in the

aetiology and persistence of TRD or chronic depression. Consequently, there are few promising candidates for the effective treatment of TRD or chronic forms of depression. These problems highlight the need for further research if effective treatment interventions for more recurrent and chronic courses of depression are to be developed.

In addition, there appear to be considerable omissions in the research of PDs. Thus far, a large proportion of PD research has focused on the Cluster B, undercontrolled PDs, such as Borderline and Antisocial PDs (Clark, 2005; Linehan, 1993). This is despite strong evidence that more over-controlled PDs (e.g., Obsessive-Compulsive PD) figure prominently in poor treatment responses (Fournier et al., 2008).

Up to now, PDs have been defined categorically but a change in current thinking is leading towards a more dimensional conceptualisation. Prior research has relied on categorical methods to define personality dysfunction (such as those defined by the Diagnostic and Statistical Manual [DSM IV-TR]; American Psychological Association, 1980), thereby creating arbitrary and unstable boundaries between normal and abnormal functioning while failing to account for high heterogeneity among persons sharing the same categorical diagnosis or high rates of diagnostic comorbidity (Widiger & Trull, 2007). Given that the DSM-V research agenda is currently advocating a dimensional approach toward PD over a categorical one (Clark, 2005), research using novel, dimensional categorisations of personality functioning should be encouraged.

Although empirical studies investigating the relationship between parent temperament and behaviour on a child's social functioning are well documented (e.g. Calkins & Fox, 2002; Eisenberg et al., 1993), there is limited research investigating how sociobiographic history may interact with an individual's temperament to influence pathology (e.g., psychological distress, social functioning deficits etc.) Additionally, the mediating effect of individual differences in self-control is often ignored in research examining temperamental influences

on psychopathologies (Bijttebier et al., 2009). Greater understanding of the underlying causes of psychopathology and the contribution of individual differences in these will permit interventions to be targeted more effectively.

Treatment Resistant Depression and Personality Disorders

Important differences between acute, chronic and treatment-resistant forms of unipolar depression exist. For example, TRD is depression that does not respond to adequate intervention, whereas the duration of chronic depression exceeds two years. As a result, TRD and chronic depression are likely to crossover, with many individuals meeting diagnostic criteria for both. Critically, they both reflect a course of depression that does not respond effectively to treatment². Indeed, recent evidence indicates that only a minority of individuals treated with antidepressant medication (ADM) – the leading intervention – for a major depressive disorder achieve full remission (e.g., 30 – 40%; Berlim & Turecki, 2007).

Identified risk factors for developing chronic depression include childhood adversity, environmental stress, and heightened stress reactivity (Riso et al. 2003). An estimated 40–60% of unipolar depressed patients meet criteria for comorbid PD, with even higher rates among those with chronic or TRD (e.g., Riso, Miyatake & Thase, 2002). Indeed, unpublished clinical data from Lynch, Hempel and Clark (in press) suggest that more than 60% of patients with a diagnosis of TRD have a type of PD. Evidence indicates that the most common types of PD among TRD individuals are Cluster-A (paranoid PD) and Cluster-C (obsessive-compulsive and avoidant PD; Fournier, DeRubeis, Shelton, Hollon, Amsterdam & Gallop, 2009). Cluster-C personality disorders were, however, the most predictive of chronic depression at follow-up in individuals with long-standing depressive symptomatology (Hayden & Klein, 2001).

² Although the focus of this review is on TRD, it is understood that many of these individuals will have comorbid chronic depression.

Lynch, Hempel and Clark (in press) propose that prior psychosocial therapies for TRD and chronic depression have been ineffective because they do not target key features of personality which are known to disrupt treatment (Fournier, DeRubeis, Shelton, Hollon, Amsterdam & Gallop, 2009). For example, research by Riso et al., (2003) confirmed that individuals with chronic depression exhibit a number of maladaptive coping styles that are characteristic of emotionally constricted PDs, including: self-criticism; impaired autonomy; rigid internalised expectations; excessive control of spontaneous emotion; and inordinate fears of making mistakes. It is these overcontrolled coping styles in individuals with TRD that Lynch, Hempel and Clark propose interfere with existing methods of treatment for their depressive symptoms. As such, they propose that targeting features of overly regulated PDs that accompany depression could improve success rates and long-term prognosis. This evidence indicates that TRD and chronic depression are strongly associated with maladaptive coping styles that are characteristic of overcontrolled PDs. These disorders are not only prevalent but challenging to sufferers, problematic to treat, understudied and poorly understood relative to other disorders such as acute depression and Cluster B PDs (McCullough & James, 2000).

In summary, the aforementioned literature describes the relationship between TRD and coping styles characteristic of overcontrolled PDs and the linked assertions made by Lynch, Barnsley, Hempel and Clark (in prep.) Their model proposes that individual differences in Self-Regulatory Capacity (SRC [coping]) mediate the relationship between Temperamental Affectivity (nature) and Sociobiographic History (e.g., early childhood experiences [nurture]) on psychological functioning (Lynch, Barnsley, Hempel & Clark, in prep; see Appendix A). Critically, it indicates how individual differences in personality, temperament and early childhood experiences can interact and result in psychological distress. The theories that have led to this assertion will be reviewed below.

Temperamental Affectivity and Self-regulation

The Reinforcement Sensitivity Theory (RST; Gray, 1970) is a neuropsychological theory of personality that comprises three major systems of emotion: The Fight-Flight System (FFS) sensitive to unconditioned aversive stimuli; the Behavioural Activation System (BAS) sensitive to appetitive (desirable) stimuli; and the Behavioural Inhibition System (BIS) sensitive to conditioned aversive stimuli. An Individual is believed to differ in their sensitivity and threshold to each of these systems, each of which manifests as a different style of behavioural response. The theory suggests that it is these differences that lead to variations in personality. For instance, individuals who are more sensitive to appetitive stimuli are likely to be higher in BAS and have a tendency towards more impulsive behaviours, whereas individuals high in BIS are likely to have a tendency for withdrawal and avoidance (Gray, 1970).

A significant revision to the RST included the addition of 'freeze' behaviour to the existing FFS system, now termed FFFS (McNaughton & Gray, 2000). As a result, the FFFS is sensitive to all aversive stimuli, both conditioned and unconditioned. A further advancement indicates that extreme activation of the BIS results in worry and rumination (McNaughton & Gray, 2000). A substantial evidence base supports the principles of the RST (see Corr, 2004 for a review) Overall, the evidence supports the central importance of reinforcement/motivational processes in personality (c.f. Carver, Sutton & Scheier, 2000).

Block and Block (1980) identified a construct which they termed ego control; the involuntary inhibition or expression of impulse. A second construct, ego resiliency, was also identified and was defined as the capacity to contextually manipulate one's level of ego-control in response to incoming stimuli. Although similar, the constructs differ depending on the level of consciousness in the individual's regulation; ego control is a subconscious

regulation of emotion whereas ego resiliency is performed at a conscious level. Block and Block's dimensional theory of ego control states that individuals vary in their level of ego control from overcontrolled (highly inhibited individuals) to undercontrolled (highly expressive or disinhibited individuals). A number of empirical studies have supported the assertion that overcontrol is an adaptive personality style and undercontrol is maladaptive (e.g. Metcalfe & Mischel, 1999; Tangney, Baumeister & Boone, 2004). For example, Muris et al. (2008) found that higher effortful control (i.e., Block & Block's ego resiliency) was negatively related to psychopathology and Zhou, Main and Wang (2010) found that effortful control positively predicted social competence. Furthermore, Lengua et al. (2008) indicated that lower effortful control was related to an increase in both internalising and externalising disorders.

More recently, Clark (2005) proposed a two affect-systems model – Positive Affectivity (PA) and Negative Affectivity (NA) – and a third, non-affective, self-regulatory system, Disinhibition versus Constraint (DvC). This model was intended to account for the relationship between personality and the development of psychopathology. In relation to Gray and McNaughton's theory, PA is comparable to BAS (approach) and NA to FFFS (avoidance; Sagarra et al., 2007). As such, BAS/PA is responsible for mediating reactions to all desirable stimuli and the associated personality comprises a cluster of optimism, reward-orientation and sensation-seeking (Corr, 2004). Conversely, FFFS/NA is responsible for mediating reactions to aversive stimuli, governing avoidance and escape behaviour and the associated personality comprises a combination of fear-proneness and avoidance (Corr, 2004). It should be noted that PA and NA are not related to each other; therefore, it is possible for an individual to be high in both PA and NA.

The non-affective system, DvC/BIS, is predicted to play a fundamental role in the extent to which incoming stimuli are subjected to its inhibitory influence. Individuals can

over-inhibit or under-inhibit their emotional response to incoming stimuli and are described as overcontrolled or undercontrolled, respectively. In accordance with Clark's (2005) model, undercontrolled individuals tend to be high in NA, are disinhibited and prone to externalising disorders such as antisocial PD, BPD, conduct disorder (Caspi, 2000; Eisenberg, Fabes, Guthrie & Reiser, 2000; Krueger, 1999), Bulimia Nervosa (Rush et al., 2009) and aggression (Hershorn & Rosenbaum, 1991). Conversely, overcontrolled individuals are high in NA, low in PA, are inhibited and prone to internalising disorders such as depression and social phobia (Caspi, 2000) and Cluster A and C PDs (Thompson-Brenner, Eddy, Boisseau, & Westen, 2008). Critically, this evidence indicates that it is maladaptive to over or under control emotional responding as both relate to pathology and deficits in social relations. This finding has been accounted for by Eisenberg et al. (2000) who specified a quadratic (inverted – U; Figure 1) relationship between SRC and social functioning (deficits of which correlate with, and feature in a number of clinical disorders like depression and PDs). This quadratic relationship between emotion regulation and social functioning contrasts with traditional theories that posit a linear relationship of control (e.g. undercontrol is maladaptive whereas overcontrol is adaptive; Block & Block, 1980). In conclusion, the non-affective system has a 'gate keeper' role in the degree to which incoming stimuli are subjected to inhibitory influence.

In summary, both Gray and McNaughton (2000) and Clark (2005) have identified two interrelated temperamental systems, BIS/BAS and NA/PA, respectively, which appear to underlie the same construct and advance more traditional linear ways of thinking (e.g., Block & Block, 1980). Similarly, they both include a regulatory component to their models, BIS (Gray and McNaughton, 2000), and DvC (Clark, 2005). In the model proposed by Lynch, Barnsley, Hempel & Clark (in prep.) it is believed that all these constructs are the same, performing gate-keeping, risk assessments, and resolving goal conflicts.

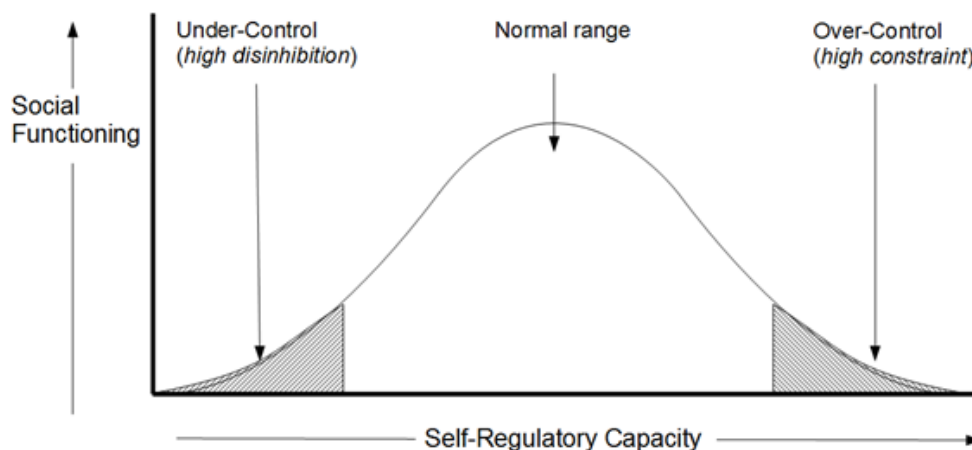


Figure 1. Graphic representation of the relationship between self-regulatory capacity and social functioning and the distribution of under-controlled and over-controlled individuals within that relationship adapted from Eisenberg, Fabes, Guthrie & Reiser, 2000.

Self-Regulatory Capacity and Psychological Functioning

Emotion regulation refers to conscious and unconscious processes that influence the occurrence, intensity, duration and expression of emotion (Gross, 1998). Emotion regulatory processes may be automatic or controlled, conscious or unconscious (Gross, 1998). As such, individuals vary in their levels of self-regulation and deficits are increasingly understood as important predictors of internalising and externalising symptoms (or over and undercontrol respectively). For example, some individuals have a tendency to evaluate a situation as being more risky than it actually is and will consequently, over-regulate their response to incoming stimuli. This emotional over-control leads to an increase in inhibited/cautious behaviours. Alternatively, some individuals underestimate the perceived level of risk and are unable to regulate their response to incoming stimuli which can lead to emotional under-control and disinhibited/impulsive behaviours.

Emotion regulation is known to be an important factor in determining wellbeing and/or successful functioning (e.g., Thompson, 1991). For example, transient increases in

depressive mood are countered by adaptive emotion regulatory efforts, which permit a return to normal mood states. In vulnerable individuals, however, increases in depressed mood are not met by successfully regulatory measures. In these situations, the individual may cross the diagnostic threshold into an episode of major depressive disorder (Gross, 1998).

Furthermore, Eisenberg and colleagues (1997) found that individual differences in regulation and intensity of emotion predict the quality of social functioning. Indeed, many PDs involve long-standing maladaptive ways of managing one's emotions that can prevent an individual from developing satisfying and sustainable relationships (APA, 1994; as cited in Gross, 1998).

A well-studied emotion regulation strategy that has particular relevance to mood disorders and anxiety is suppression; the conscious act of forcing unwanted information out of our awareness. Studies indicate that suppression reduces the *behavioural expression of emotion* compared to control conditions, but does not decrease the subjective experience of negative emotion (e.g., Gross, 1998). Additionally, habitual use of suppression is associated with experiencing less positive emotion and greater negative emotion overall, worse interpersonal functioning and lesser wellbeing (Gross & John, 2003). More recently, Campbell-Sills, Barlow, Brown and Hoffman (2006) demonstrated that appraising emotions as unacceptable or unwanted mediated the relationship between negative emotion intensity and use of suppression within a group of individuals with anxiety and mood disorders. These findings contrast with the profile of individuals who habitually use an alternative regulation strategy, cognitive reappraisal – the interpretation of a potentially emotion-eliciting situation that changes its emotional impact (Gross & John, 2003) – to manage emotions. For example, cognitive reappraisal is associated with increased positive emotion and less negative emotion overall, better interpersonal functioning and greater wellbeing (Gross & John, 2003).

Depression has been linked to emotional dysregulation, particularly in the form of rumination, which involves a tendency to passively focus on the causes and consequences of depressed mood (e.g., Silk, Steinberg & Morris, 2003). In a recent study, McLaughlin and Hatzenbuehler (2009) indicated that emotion dysregulation mediated the relationship between stressful life events and mental health outcomes in a sample of adolescents. Emotional dysregulation was defined as poor emotional understanding (e.g., “I often do not know how I am feeling”; Penza-Clyve & Zeman, 2002), dysregulated emotion expression (e.g., “I attack whatever is making me angry”; Zeman, Shipman & Penza-Clyve, 2001) and rumination (e.g., “[I] think, why can’t I handle things better? Abela, Brozina & Haigh, 2002). This robust, longitudinal study concluded that stressful life events appeared to disrupt the adaptive processing of emotion among a sample of 1567 adolescents, thus identifying an intrapersonal process in which stressful events can “get under the skin” (McLaughlin & Hatzenbuehler, 2009, p.153).

Addressing the Clinical Issue of Control

Lynch, Hempel and Clarke (in press) posit that temperamental predispositions for low reward sensitivity and high threat sensitivity coupled with difficult childhood experiences and environmental stress are believed to severely inhibit capacities or opportunities to learn flexible-responding; resulting in the development and maintenance of a personality style characterized by excessive inhibitory control (overcontrol) that increases the likelihood of psychological disorders such as treatment resistant or chronic courses of depression. To treat TRD, Lynch (in press) has proposed a novel adaptation of Dialectical Behaviour Therapy (DBT) that specifically targets overcontrol that is referred to as Radically Open-DBT (RO-DBT). DBT was originally designed for individuals with borderline personality disorder (Figure 2; BPD; Linehan, 1993); BPD is characterised by poor inhibitory control, mood

dependency, and low distress tolerance (Rosenthal et al., 2008) and is placed within the ‘erratic and dramatic’ undercontrolled cluster B personality disorders (APA, 2000).

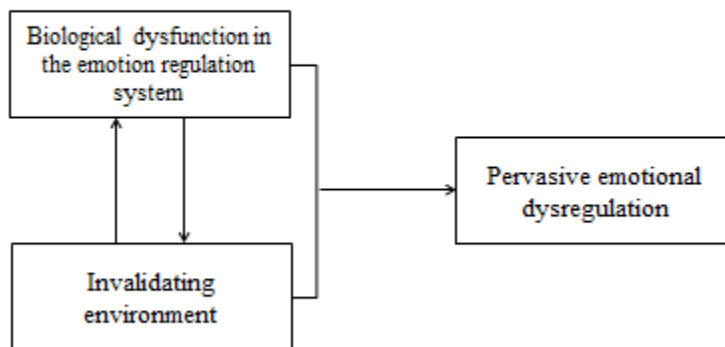


Figure 2. Biosocial theory of borderline personality disorder taken from Linehan, 1993.

In many ways, BPD represents the prototypical undercontrolled disorder. Yet, for individuals characterised by overcontrol, Lynch and colleagues speculated that there are fundamental genetic/temperamental and sociobiographic differences that set them apart from undercontrolled individuals and these differences function to create the unique patterns of responding associated with overcontrol (Lynch & Cheavens, 2008; Lynch, Hempel, & Clark, in press). Overcontrol has been described as comprising of three skills deficits: i) in the expression and experience of emotion, ii) in forming close relationships and iii) in receptivity and openness (Lynch, Hempel & Clark, in press). The biosocial theory for RO-DBT posits that maladaptive overcontrol develops when an individual is temperamentally insensitive to reward and overly sensitive to threat stimuli, has a family/environment emphasizing mistakes as intolerable and self-control as imperative, and learns to cope by masking inner feelings, avoiding risk, being perfectionistic and obsessively focusing on details, enduring or minimizing distress, and behaving in an aloof/distant manner. Thus, overcontrol encompasses

many of the behaviours and problems associated with cluster A and C PDs (Lynch, in press). When applied to TRD, and unlike more traditional therapeutic approaches (e.g. CBT), Lynch and colleagues' novel treatment does not target features of depression directly but instead treats this co-occurring overcontrol personality prototype.

The efficacy of RO-DBT rests upon two published randomised controlled trials (RCTs) targeting overcontrol and TRD (Lynch et al., 2003; Lynch et al., 2007) and one uncontrolled-pilot trial targeting overcontrol and anorexia nervosa (Lynch et al., under review). Results from these RCTs indicated that modified DBT (for overcontrol) and ADM produced significant advantages for reducing rates of remission compared to medication alone in the treatment of chronic depression. In addition, DBT plus medication demonstrated superiority in reducing both interpersonal sensitivity and interpersonal aggression at post-treatment and six month follow-up in a sample of older adults with co-morbid depression and PD. Overall, these findings indicate that depressive symptoms, dimensions of personality and interpersonal relating can significantly improve with RO-DBT in older adults. Although these findings are encouraging, they must be interpreted cautiously because they relate to a very specific clinical group. As such, it is not possible to establish whether the observed differences are attributable to the treatment or non-specific factors related to the sample (age, cognitive functioning etc). Furthermore, although these findings offer preliminary support for Lynch and colleagues' model because it has not been empirically grounded findings cannot be generalised to other populations. For these reasons, future research using a range of different samples is required.

A key prediction from Lynch et al.'s theory of TRD is that individuals with TRD will be characterised by having more overcontrolled tendencies than individuals who do not have recurrent/chronic depression or normal individuals. Given that an individual's coping style is fluid and able to change over time (c.f., Linehan, 1993), Lynch, Hempel and Clark propose

that targeting features of overly regulated PDs (e.g., rigidity, inhibition of emotions and behaviour) that accompany depression could improve success rates and long-term prognosis (i.e., improved psychological wellbeing). As mentioned previously, Lynch and colleagues' model is already being tested in a clinical trial without it having been validated. To address this omission, regression and mediation studies should be conducted to establish the relationships between these key variables. Once these have been explored, longitudinal studies using outcome data should be conducted to establish the causal links between these variables. Furthermore, no study has directly compared the control tendencies of different depressive groups (e.g., acute forms, individuals in remission etc.,) or depressed individuals with normal controls. This could be achieved by conducting comparative evaluations with a series of different groups.

Conclusions

The current review has examined the literature regarding personality and its relationship with psychopathology. The relationships have been reviewed in terms of Gray's (1970) RST and Clark's (2005) Three Systems model of affect which have highlighted the importance of self-regulatory capacity. Indeed, a new model proposed by Lynch, Barnsley, Hempel and Clark (in prep.) proposes that individual differences in personality, temperament and early childhood experiences can interact and result in psychological distress. This untested model has many clinical and theoretical implications. For example, the majority of PD research focuses on under-regulated PDs (e.g., borderline), despite convincing evidence that overly regulated PDs (e.g., obsessive-compulsive) regularly feature in poor treatment responses; little research examining how Sociobiographic History (e.g., invalidating environments/childhood maltreatment) interact with temperamental factors influencing social functioning exists; most research examining temperamental influences on the development of

psychopathology (including social dysfunction) over-looks potential mechanisms of change (i.e., individual differences in self-regulatory capacity) and prior models rarely link theory to treatment and/or provide clear rationale for developing new interventions. Gaining a richer understanding of overcontrolled individuals who are less widely researched but frequently re-present to services and remain treatment resistant could be particularly beneficial, both in terms of their wellbeing and for health services.

Search Strategy

Searches were conducted on Web of Science, PsycINFO, PsyArticles and PubMed electronic databases. Combinations of the following search terms were used: Temperament* affect*, pathology, mental health, social functioning, personality, personality disorders, depress* disorders/illness, emotion regulation, self-regulation, self-regulatory capacity, over-controlled or under-controlled, temperament* systems, childhood maltreatment, individual differences.

References

- Abela, J. R., Brozina, K., & Haigh, E. P. (2002). An examination of the response styles theory of depression in third and seventh grade children: A short-term longitudinal study. *Journal of Abnormal Child Psychology*, *30*, 515-527.
- American Psychological Association (1980). *Diagnostic and statistical manual of mental disorders* (3rd ed.) Washington DC: Author.
- Baumeister, R. F., Heatherton, T. F., & Tice, D. M. (1994). *Losing control: How and why people fail at self-regulation*. San Diego: Academic.
- Berlim, M. T., & Turecki, G. (2007). What is the meaning of treatment resistant/refractory major depression (TRD)? A systematic review. *European Neuropsychopharmacology*, *17*, 696–707.
- Bijebier, P., Beck, I., Claes, L. & Vandereycken, W. (2009). Gray's reinforcement sensitivity theory as a framework for research on personality and psychotherapy associations. *Clinical Psychology Review*, *29*, 421-430.
- Block, J. H., & Block, J. (1980). The role of ego-control and ego-resiliency in the organisation of behaviour. In W. A. Collins (Ed) *Development of cognition, affect, and social relations: Minnesota Symposia on Child Psychology* (Vol. 13, p. 48). Hillsdale, NJ: Erlbaum.
- Calkins, S. & Fox, N. (2002). Self-regulatory processes in early personality development: A multilevel approach to the study of childhood social withdrawal and aggression. *Development & Psychopathology*, *14*, 477-498.
- Campbell-Sills, L., Barlow, D. H., Brown, T. A., & Hofmann, S. G. (2006). Effects of suppression and acceptance on emotional responses on individuals with anxiety and mood disorders. *Behavior Research and Therapy*, *44*, 1251-1263.
- Carver, C., Sutton, S. & Scheier, M. (2000). Action, emotion and personality: Emerging conceptual integration. *Personality and Social Psychology Bulletin*, *26*, 741-751.
- Caspi, A. (2000). The child is father of the man: Personality continuities from childhood to adulthood. *Journal of Personality and Social Psychology*, *1*, 158-172.

- Clark, L. (2005). Temperament as a Unifying Basis for Personality and Psychopathology. *Journal of Abnormal Psychology, 11*, 505-521.
- Corr, P. J. (2004). Reinforcement sensitivity theory and personality. *Neuroscience & Biobehavioral Reviews, 28*, 317-332.
- Eisenberg, N., Fabes, R., Guthrie, I. & Reiser, M. (2000). Dispositional Emotionality and Regulation: Their Role in Predicting Quality of Social Functioning. *Journal of Personality and Social Psychology, 78*, 136-157.
- Eisenberg, N., Fabes, R., Bernweig, J., Karbon, M., Poulin, R. & Hanish, L. (1993). The relations of emotionality and regulation to preschoolers' social skills and sociometric status. *Child Development, 64*, 1418-1438.
- Eisenberg, N., Fabes, R., Shepard, S., Murphy, B., Guthrie, I., Jones, S. et al. (1997). Contemporaneous and longitudinal prediction of children's social functioning from regulation and emotionality. *Child Development, 68*, 642-664.
- Fournier, J. C., DeRubeis, R. J., Shelton, R. C., Hollon, S. D., Amsterdam, J. D., & Gallop, R. (2009). Prediction of response to medication and cognitive therapy in the treatment of moderate to severe depression. *Journal of Counselling and Clinical Psychology, 77*, 775-787.
- Gray, J. (1970). The Psychophysiological basis of introversion-extraversion. *Behaviour Research and Therapy, 8*, 249-266.
- Gross, J. J. (1998). Antecedent and response focused emotion regulation: Divergent consequences for expression, experience, and physiology. *Journal of Personal Social Psychology, 24*, 224-237.
- Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology, 85*, 348-362.
- Hayden, E. P., Klein, D. N. (2001). Outcome of dysthymic disorder at 5-year follow-up: The effect of familial psychopathology, early adversity, personality, comorbidity, and chronic stress. *The American Journal of Psychiatry, 158*, 1864-1870.

- Hershorn, M. & Rosenbaum, A. (1991). Over- versus Undercontrolled Hostility: Application of the construct to the classification of martially violent men. *Violence and Victims*, 6, 151-158.
- Kreuger, R. (1999). The structure of common mental health disorders. *Archives of General Psychiatry*, 56, 921-926.
- Lengua, L., Bush, N., Long, A., Kovacs, E. & Trancik, A. (2008). Effortful control as a moderator of the relation between contextual risk factors and growth in adjustment problems. *Development and Psychopathology*, 20, 509-528.
- Linehan, M. M. (1993). *Cognitive-Behavioural Treatment of Borderline Personality Disorder*. New York, Guilford Press.
- Lynch, T. R., Barnsley, M., Hempel, R. J., & Clark, L. A. (in prep.) A transdiagnostic neuro- regulatory model of socio-emotional functioning.
- Lynch, T. R., & Cheavens, J. (in press). *Dialectical Behaviour Therapy for Treatment Resistant Depression*. New York: Guilford Press.
- Lynch, T. R., Cheavens, J. S., Cukrowicz, K. C., Thorp, S., Bronner, L., & Beyer, J. (2007). Treatment of older adults with co-morbid personality disorder and depression: A dialectical behaviour therapy approach. *International Journal of Geriatric Psychiatry*, 22, 131-143.
- Lynch, T. R., Gray, K. L. H., Hempel, R. J., Titley, M., Chen, E. Y., O'Mahen, H. (under review). Feasibility and outcomes of an adapted dialectical behavior therapy inpatient program for the treatment of adult Anorexia Nervosa. *BMC Psychiatry*.
- Lynch, T. R., Hempel, R. J., & Clark, L. A. (in press). Flexibility and radical openness: Facilitating self-inquiry in overcontrolled personality disorders. In J. Livesley, G. Dimaggio & J. Clarkin (Eds) *Integrated Treatment of Personality Disorder*. Guilford Press.
- Lynch, T. R., Morse, J. Q., Mendelson, T., Robins, C. J. (2003). Dialectical behaviour therapy for depressed older adults: A randomised pilot study. *The American Journal of Geriatric Psychiatry*, 11, 1-13.

- McCullough, J., & James, P. (2000). *Treatment for chronic depression: Cognitive Behavioral Analysis System of Psychotherapy (CBASP)*. New York: Guilford Press.
- McLaughlin, K. A., & Hatzenbuehler, M. S. (2009). Mechanisms linking stressful life events and mental health problems in a prospective, community-based sample of adolescents. *Journal of Adolescent Health, 44*, 153-160.
- McNaughton, N., & Gray, J. (2000). Anxiolytic action on the behavioural inhibition system implies multiple types of arousal contribute to anxiety. *Journal of Affective Disorders, 61*, 161-176.
- McPherson, S., Cairns, P., Carlyle, J., Shapiro, D., Richardson, P., & Taylor, D. (2005). The effectiveness of psychological treatments for treatment-resistant depression: A systematic review. *Acta Psychiatrica Scandinavica, 111*, 331–340.
- Metcalfe, J. & Mischel, W. (1999). A hot/cold system of delay of gratification: Dynamics of willpower. *Psychological Review, 106*, 767-777.
- Mischel, W., Shoda, Y. & Peake, P. (1988). The nature of adolescent competencies predicted by preschool delay of gratification. *Journal of Personality and Social Psychology, 54*, 687-696.
- Moussavi, S., Chatterji, S., Verdes, E., Tandon, A., Patel, V., & Ustun, B. (2007). Depression, chronic diseases, and decrements in health. *The Lancet, 370*, 851–858.
- Murray, C., & Lopez, A. (1997). Alternative projections of mortality and disability by cause 1990-2020. *The Lancet, 349*, 1498–1504
- National Institute for Health and Clinical Excellence. (2007). *Depression: The Treatment and Management of Depression in Adults*. London: NICE.
- Penza-Clyve, S., & Zeman, J. (2002). Initial validation of the emotion expression scale for children (EESC). *Journal of Clinical Child and Adolescent Psychology, 31*, 540-547.
- Riso, L. P., Blandino, J. A., Penna, S., Dacey, S., Grant, M. M., Du Toit, P. L., et al. (2003). Cognitive aspects of chronic depression. *Journal of Abnormal Psychology, 112*, 72–80.

- Riso, L. P., Miyatake, R. K., Thase, M. E. (2002). The search for determinants of chronic depression: a review of six factors. *Journal of Affective Disorders, 70*, 103–115.
- Rosenthal M.Z., Kim, K., Herr, N.R., Smoski, M.J., Cheavens, J.S., Lynch, T.R., & Kosson, D.S. (under review). Emotional sensitivity in avoidant personality disorder: Speed and accuracy of facial expression classification.
- Rush, A. J., Trivedi, M. H., Wisniewski, S. R., Nierenberg, A. A., Stewart, J. W., Warden, D. et al. (2006). Acute and longer-term outcomes in depressed outpatients requiring one or several treatment steps: A STAR*D report. *American Journal of Psychiatry, 163*, 1905-17.
- Sagarra, P., Ross, S., Pastor, M., Montanes, S., Poy, R. & Molto, J. (2007). MMPI-2 predictors of Gray's two-factor reinforcement sensitivity theory. *Personality and Individual Differences, 43*, 437-448.
- Silk, J. S., Steinberg, L., Morris, A. S. (2003). Adolescents' emotion regulation in daily life: links to depressive symptoms and problem behaviour. *Child Development, 74*, 1869-80.
- Tangney, J., Baumeister, R. & Boone, A. (2004). High self-control predicts good adjustment, less pathology, better grades and interpersonal success. *Journal of Personality, 72*, 271-322.
- Thompson-Brenner, H., Eddy, K., Boisseau, C. & Westen, D. (2008). Personality subtypes in adolescents with eating disorders: Validation of a classification approach. *The Journal of Child Psychology and Psychiatry, 49*, 170-180.
- Widiger, T. & Trull, T. (2007). Plate tectonics in the classification of personality disorder: shifting to a dimensional model. *American Psychologist, 62*, 71-83.
- Zeman, J., Shipman, K., Penza-Clyve, S. (2001). Development and initial validation of the Children's Sadness Management Scale. *Journal of Nonverbal Behaviour, 25*, 187-205.
- Zhou, Q., Main, A. & Wang, Y. (2010). The relations of temperamental effortful control and anger/frustration to Chinese children's academic achievement and social adjustment: A longitudinal study. *Journal of Educational Psychology, 102*, 180-196.