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Beauty in Bulk:
An Examination of Performance and Image Enhancing Drug (PIED) Use and Attitudes

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ABSTRACT: The growth of the gym subculture has been fuelled by increased popularity and pressure for physical performance and image enhancement; however parallel to this are potentially dangerous behaviours involving performance and image enhancing drugs (PIEDs). Evidence suggests that the market for PIEDs has expanded and such illicit substances are currently widely available and consumed. Reports from users, evidence from relevant industry bodies and the significant rise in PIED related arrests and seizures in recent years have all contributed to the troubling picture emerging. In response to tougher legal measures for those buying and selling in this market PIEDs are now aligned with other illicit drugs like heroin, amphetamine and cocaine in terms of seriousness of offence, penalty and reflecting the overall potential for user and community harms. Legislative changes alongside observable popularity of the gym subculture, and media coverage of elite athletes embroiled in doping scandals continue to generate attention and controversy surrounding PIEDs and raises questions about the reality of these drugs. This study seeks to contribute to the growing knowledgebase surrounding PIEDs by measuring current trends as well as listening to and incorporating the valuable perspectives of users and the wider community. This paper presents the preliminary findings from survey respondents (n=86) who reveal unique insights into the experiences of those who currently or have historically consumed PIEDs. Specifically, attention is paid to respondents’ perceptions about the drugs’ potential capacity for physical and/or psychological harm or addiction. Other findings gauge: the level of danger users and nonusers attribute to PIEDs when compared with other illicit drugs; whether criminalisation is an appropriate response; and what alternatives could be more effective in reducing harm. This knowledge can improve community awareness and inform strategies aimed at maximising safety and minimising risks associated with PIEDs.

Keywords: Performance and image enhancing drugs; steroids; criminalisation; addiction
Introduction:

Performance and image enhancing drugs (PIEDs) have become a prominent issue for a range of sectors including health, sports and more recently extending to the attention of criminal justice policy makers. High-profile claims of links between elite sports and organised crime from the Australian Crime Commission (ACC, 2013) have put PIEDs squarely in the consciousness of mainstream society. The ACC (2013: 7) noted that “the PIEDs market in Australia is large and diverse, with a wide range of substances being used by a broad cross-section of the community” . So, whilst high profile sports-related PIED supplement sagas continue to dog the headlines, the elevated seriousness of penalties suggests a widening of the net when considering other PIED users. This research seeks to examine how well this response aligns with user and wider community perspectives in the context of harsher penalties for PIED-related offences.

Background & Literature Review:

The most widely used types of PIEDs are anabolic-androgenic steroids (AAS). These synthetic drugs are testosterone-based drugs which have two primary effects grounded in masculine changes: the promotion and development of male sex characteristics (androgenic); and protein and muscle building (anabolic) (Levinthal, 2012). The broader PIED market has however revealed that there are other such drugs growing in popularity which are alternative, supplementary or complementary to the use of AAS. The Australian Standard Classification of Drugs Concern includes anabolic androgenic steroids as well as beta2 agonists, peptide hormones, mimetics and analogues in their categorisation of ‘anabolic agents and selected hormones’ (Australian Bureau of Statistics, 2011) . These varieties of drugs are being referred to broadly as ‘PIEDs’ to capture the wide scope of effects.

Recent ACC (2015a) drug data regarding domestic market indicators (including record numbers of seizures, detections and arrests) have shown that the community hunger for PIEDs are increasing rapidly and the market is expanding accordingly. Whilst seizures of PIEDs at the Australian border in 2013-14 decreased by 33.5% for the previous year, they remain higher than historic levels (ACC, 2015a). Analysis of intelligence revealed this may be explained by a possible rise in domestic production of injectable PIEDs through non-controlled chemical diversion and raw material imports (ACC, 2015c). Of note is that steroids accounted for the majority of these seizures at 77.4% for the 2013-2014 period and hormones accounted for 22.6%
Although the weight of national steroid seizures declined in 2013-14 the number increased (by 7.9%) to a historic high of 357 for the period (ACC, 2015a).

PIEDs appear to have somewhat of a concentrated market, with a range of indicators pointing to New South Wales (NSW) and Queensland (QLD) as ‘hotspots’. NSW accounted for 49.6% of PIED seizures and QLD accounted for 57.8% of total arrests (consumer and provider) and 61.1% of consumer arrests in the period (ACC, 2015a). This geographic concentration tends to corroborate needle and syringe program (NSP) findings (Iversen et al., 2013).

Overall, arrests for steroids in Australia have increased substantially in recent times. Between 2009-10 and 2013-14, arrests for consumers of steroids increased by 242% and arrests for providers has risen by 167% (ACC, 2015a). In comparison, heroin arrests for the same period only increased by 10%, cocaine arrests increased 20%; despite heroin and cocaine being traditionally regarded as ‘hardcore’ drugs (ACC, 2015a). While the number of arrests for steroids is comparatively small when compared to other illicit drugs such as cannabis and amphetamine type substances, there is no doubt it is an emerging crime trend which is rapidly becoming a serious threat.

Gauging the presence and popularity of PIEDs in the wider community is an exercise which must not only rely on law enforcement data but must also draw from drug service providers and other research to inform a more user-oriented perspective. The 2013 National Drug Strategy Household Survey (AIHW, Australian Institute of Health and Welfare, 2014) indicated <1% of Australians aged 14 years or older had been offered or had the opportunity to use steroids in the past year. The 1995-2014 Australian Needle and Syringe Program Survey (ANSPS, 2015) cited stable (2% - 3%) PIED use (as reported last injected drug for respondents) from 1995 to 2010 and then saw prevalence jump from 2% to 7% in 2014. PIED use also saw a significant spike in ‘new initiates’ reporting PIEDs as their last injected drug in the ANSPS (2015); this represented the largest proportion of the 2011-2014 period compared with other drugs. Again, overall increases in PIEDs were disproportionately represented (>90%) by QLD and NSW during the period (ANSPS, 2015). An analysis of the dataset revealed that the overrepresentation of certain states may be explained in part by the ‘body beautiful/cultural element’ observed in these locations (Iversen cited in Bleeker, 2014: 24). Similar studies conducted across Australia corroborate reported increases in PIED use; specifically evident in NSP populations (Iversen et al., 2013; Dunn et al., 2014). There will, of course, remain a ‘dark
figure’ in PIED prevalence rates, as with any drugs. Larance et al. (2008: 679) suggested that for PIED users “fear of sanction from the medical profession, sporting agencies, police and the wider community may result in under-reporting”. Due to the mounting anecdotal evidence of the popularity of these substances, it may be that official figures seriously underestimate the scope of this problem.

To combat the threat posed by the increased presence of PIEDs, a number of jurisdictions have introduced harsher penalties for PIED-related offences. The Queensland Legal Affairs and Community Safety Committee (2014: 39) noted that other jurisdictions had moved PIEDs to the “same categories as methamphetamines, heroin and cocaine, making them subject to more onerous penalty regimes applicable to these types of ‘prohibited drugs’ (New South Wales), ‘drugs of dependence’ (Victoria), ‘dangerous drugs’ (Northern Territory), or other equivalent statutory groupings”. From this Queensland introduced the Safe Night out Legislation Amendment Bill in 2014 that specifically provided for amendments to Queensland’s Drugs Misuse Act. The Drugs Misuse Act was amended to include steroid drugs or PIEDs in the same category of drug offences as heroin, cocaine and amphetamine type substances1. New offences have been introduced as well as additional penalties in relation to PIEDs. The elevation of seriousness of PIED-type drug offences seems to be entwined with the policy objectives of the Safe Night Out Legislation Amendment Bill 20142 which aims to improve Queensland’s nightlife safety, reduce drug and alcohol-related violence and foster and advocate a culture of responsibility. The Legal Affairs and Community Safety Committee (2014: 37) that proposed these changes commented as below in their report to Parliament:

_The Bill proposes to strengthen penalties for offences involving anabolic-androgenic steroids so that they are similar to those applying to other dangerous drugs, such as methamphetamines and ecstasy…The Committee considers the strengthened penalties outlined above are appropriate and will assist with the Government’s intention to make Queensland a safer place. The Committee is satisfied anabolic-androgenic steroids should be treated that same as other dangerous drugs such as methamphetamines and ecstasy._

Little evidence was provided in the report to justify why this stance is taken. The committee did refer to one submission from the Valley Liquor Accord (VLA) who championed the move and suggested that “these drugs [PIEDs] are an insidious thing which adds to a poor culture in the youth of Australia, a culture which is not welcome” (Legal Affairs and

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1 See Amendments to Schedule 1 and 2 of the Drugs Misuse Regulations 1987 (Qld).
2 Safe Night Out Legislation Amendment Bill 2014
Community Safety Committee, 2014: 40). This was reflected in the debate in Queensland Parliament during the reading of the Bill. State Member Aaron Dillaway, the member for Bulimba on Brisbane’s Southside, argued why steroids needed to treated the same as other drugs (Queensland Parliament, 2014: 2687),

*It is important to acknowledge here today that, sadly, alcohol alone is not the sole cause of this violent behaviour. In many situations previously people committing acts of violence on nights out are also under the influence of drugs. This was constantly pointed out to me by respondents to my survey who drew my attention to the emerging ‘bruss’ subculture—a term I have been told is used by our younger generations to describe a person who devotes his entire time shredding and mass bulking at the gym and may use steroids to enhance this process.*

Linking steroid use and violence, as Dillaway has done here, is never far away in public discourse on PIEDs because it lends support to the popular ‘roid rage’ narrative – a strong selling point for policy makers seeking to appear hard-line on drugs. Survey, field and experimental research indicate that in high supraphysiologic AAS (most commonly studied PIEDs) doses, psychiatric effects including severe mood swings, irritability, and aggression or violence can be produced, even in individuals with little or no reported history of such behaviour (Choi et al., 1990; Choi and Pope, 1994; Pope and Katz, 1990; Pope et al., 1996; Thiblin and Parklko, 2002; Hall et al., 2005). Other studies have specifically linked violent and other crimes (e.g. property crime) with PIEDs (Klötz et al., 2007; Lundholm et al., 2010; Peters et al., 1999; Thiblin and Parklko, 2002; Thiblin et al., 1997).

An extension of this is the finding that PIED users are often polydrug users who may even consume multiple simultaneous substances as ‘liquid courage’ for committing crime (Petersson, 2008; Gårevik and Rane, 2010; Larance et al., 2008). Maycock and Howat (2007: 862) suggested that PIED use may socialise people into a life of crime because the “subculture relies upon constructs of belonging, social interaction, trust and reciprocity... because [the users engage in] sharing of an illegal act, the obligations accrued and the bonds created”. Kanayama et al. (2010: 115) concluded that while AAS-related aggression, violence or crime cannot be fully explained by either psychosocial factors like personality or gym culture or physiological ones, the overall results of studies indicate effects are at best “unpredictable and idiosyncratic”; thus calling for more research in this space.

The ACC (2015b: 49) suggested that “one of the key drivers of the market is a strong youth culture, particularly prevalent among young males, that is focused on a muscular and athletic physical appearance”. This assessment accurately captures some of the characteristic features of the ‘typical’ PIED user in terms of gender and age as supported by key Australian
literature (Iversen et al., 2013; Larance et al., 2008; Dennington et al., 2008; Iversen and Maher, 2015; AIHW, 2014; Day et al., 2008). Other demographic considerations reflected in the literature include the presence of PIEDs in adolescent populations which has been correlated with low self-esteem, use of other substances and other risk-taking behaviours (Humphreys and Ruseski, 2011; Bahrke et al., 2012; Irving et al., 2002). Studies from abroad were also consistent with Australian research on PIED users typically holding consistent employment, being well educated and maintaining higher a socio-economic status (Cohen et al., 2007; Dennington et al., 2008).

While there appears to be a fairly clear demographic picture of PIED users, motivations for use are inherently individual. Larance et al. (2005) summarised four key user types including: elite athletes, body image users, occupational users and adolescents. Overwhelmingly, body image-related concerns are emerging as the most common and primary driver for PIED use. This has been largely attributed to increased sociocultural pressure on men - such as media depictions of a stereotypically ‘ideal’ masculine physique and the rise of the gym culture (Baghurst et al., 2006; Bergeron and Tylka, 2007; Pope et al., 2001; Stanford and McCabe, 2005; Grogan and Richards, 2002). This has been linked to serious physical and psychological health implications such as ‘muscle dysmorphia’ which some users treat through PIED abuse (Pope et al., 2005; Hildebrandt et al., 2010; American Psychiatric Association, 2013). One risk for individuals who use high levels of PIEDs due to a preoccupation with muscularity is the development of dependence and addiction.

Dependence on PIEDs (specifically AASs) share many features with the classical substance dependence framework. The classic abuse-dependence model of drug addiction relates to the primary ability of some drugs like cocaine or opiates to hijack the motivation-reward systems (Hildebrandt et al., 2011). Wood (2008) found that AAS share brain sites of action in common with other drugs, particularly opioids. Under the same model of addiction used for opioids, one third of AAS users would meet the dependence criteria (Hildebrandt et al., 2011). Copeland et al. (2000) studied the occurrence of DSM-IV symptoms of dependence and abuse in a sample of Australian PIED users and found that: 78% of the sample exhibited at least one symptom; 23% qualified for a diagnosis of dependence; and 25% met the criteria for abuse. However, PIEDs are markedly distinct from other highly addictive substances and as such it is proposed that they have a different abuse potential which has implications for notions of dependence (Larance et al., 2005).
PIEDs deviate from other commonly abused drugs in many ways. Firstly, there is no evidence of intoxication, immediate adverse effects or impaired performance (Kanayama et al., 2009). Secondly, Hildebrandt et al. (2011: 3) explained that “most classical drugs of abuse are initiated and reinforced in a gregarious social context, interfere with the pursuit of health and wellbeing, and require little effort to achieve the desired effects”. This profile is starkly different from PIED users who must use the drugs for prolonged periods to see results, are fixated on image and health; thus having to exert significant energy and effort into diet and exercise regimes. Thirdly, cessation of PIEDs does not mimic the withdrawal characteristics of opioid drugs. Rather, ‘off’ cycle periods are purposefully orchestrated and distress associated with cessation is linked more to changes in performance or image than physiological withdrawal associated with opioid drugs (Hildebrandt et al., 2011).

Methodology:

Instrument & Measures

A questionnaire was designed and administered with a two-pronged purpose to survey both PIED users and non-users. User-specific questions (n=26) were aimed at developing a user profile and addressed demographics and PIED consumption trends; associated health issues or side effects; and motivations for use. All other questions (n=26) which considered perceived PIED benefits, level of danger (in comparison to other illicit substances), psychological effects, addictive capacity and criminalisation were purposefully applicable for both users and users to facilitate comparison between user and the wider community perspectives on relevant issues. A total of 52 questions were asked using a combination of close-ended questions for quantitative analysis and open-ended questions to generate rich qualitative data for analysis of perceptions.

Commencing the questionnaire was contingent upon agreeing to read the explanatory statement and consent form provided at the beginning of the instrument. These documents assured confidentiality for respondents and the option to withdraw data at any stage. Ethics approval for the project was obtained from Bond University Human Research Ethics Committee

Data Collection

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3 These questions were treated as non-applicable to respondents who identified as non-users.
Internet-administered research was selected for data collection due to the nature of the study. Internet-based surveys have been validated as a method for collecting self-report on substance use (McCabe, 2004). In addition to standard ethical confidentiality assurances, utilising an online environment can help respondents to feel more comfortable about providing honest answers to sensitive questions (Sue and Ritter, 2007). Further, the Internet has become a primary source of buying, selling and learning about PIEDs (through forums) users are therefore likely experienced in navigating the online sphere. Specifically, SurveyMonkey was chosen as an online survey generator to create and disseminate the questionnaire. This kind of method has been successfully used in other similar studies (Parkinson and Evans, 2006; Perry et al., 2005). Internet-administered surveys which are based on general invitation on websites and through other media do have limitations such as sample self-selection bias (Vehovar and Manfreda, 2008), however, this non-probability sampling was deemed to be a resource-effective, non-intrusive and an overall appropriate approach to exploratory seed research. The questionnaire has now been available for 18 months and a sample of 86 responses was selected based on level of questionnaire completion.

**Sampling**

A combination of non-probability convenience and purposive sampling were used in the distribution of the questionnaire’s web address link. Firstly, it was disseminated through researcher collegiate networks. Since the web survey link went live online it has also received national media circulation in news articles reporting on the current research in the context of the wider issue of PIEDs. The survey link was also posted into public PIED-relevant forums and site administrators were contacted and asked to promote the survey within their networks; a method used in similar studies (Coomber, 1997; Cohen et al., 2007). Relevant industry partners, the Queensland Health Injectors Network (QuIHN), also participated by promoting the link with flyers at their Burleigh, Gold Coast site which has reported a significant rise in PIED users seeking equipment, education and support services (Iversen et al., 2013). Despite statistical and population representativeness limitations inherent to convenience sampling Sue & Ritter (2007) remind that sampling should be directed by research objectives and therefore, the pilot exploratory nature of this study invites the use of this method.

SPSS was used to collate, store and treat quantitative data, while NVivo was utilised for qualitative data.
Findings:

Demographics

The sample (n=86) was comprised of 67.4% males and 32.6% females. The mean age of all respondents was 31 years (standard deviation (SD) 12.5), ranging from 18 to 73 with the modal age being 22 years. Just over half (51.8%, n=43) of respondents reported ‘currently using or have used’ PIEDs, 48.2% (n=40) reported never using PIEDs and 3.5% (n=3) did not respond to the question and made no indication either way in their responses to subsequent questions. As such, these three cases have been excluded from the count where a distinction between user and non-user was the basis for comparison so as to not misrepresent them. Figure 1 summarises the distribution of ages comparing users and non-users, highlighting a predominately youthful sample which is consistent with other Australian findings.

Table 1 further summarises the distribution of age using descriptive statistics for age and gender by user and non-user respondents.

Largely the questionnaire attracted Australian respondents (95.3%) with 82 respondents across five states. Queenslanders represented 58.1% of the overall sample, New South Wales...
19.8%, Victoria 14.0%, South Australia and Western Australia 1.2% each and one Australian did not indicate. Three respondents (3.5%) were from the United States – all of whom identified as PIED users - and one respondent (1.2%) did not nominate any location.

*Usage trends*

i.  *User history*

The majority of respondents reported starting to use PIEDs in young adulthood (see Figure 1). The age range for reported first use of PIEDs was 17-45 years old with a mean age of 26 years (SD=8.5), a median of 24 and modal age was 19 years. The greatest number of using respondents (36.1%) reported a duration of use of >5 years.

![Figure 1: Age of first PIED use (n=32) a](image)

Eleven users did not respond to the question.

![Figure 2: Reported duration of PIED use (n=36) a](image)

*Seven users did not respond to the question.*

ii. *Sourcing and cost*
On average, 44% of responding users (n=36) indicated spending between $201-500 on PIEDs per month. More than half (65.9%) of user respondents reporting obtaining illegal PIEDs with the most common source being either the Internet or a friend (see Figure 3). ‘Other’ responses included legally from supplement stores or illegally from the ‘underground’. Six respondents had sourced PIEDs from an Outlaw Motorcycle Gang or someone associated to such a gang. Two users did not respond to this question and the rest indicated ‘no’.

![Figure 3: Source of PIEDs (n=40)](image)

<table>
<thead>
<tr>
<th>Legal source</th>
<th>Illegal source</th>
<th>Don't know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legal nature of source</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Three users did not respond to questions relating to source.

### iii. Usage practices

The majority of user respondents (88.9%) have engaged in the practice of cycling⁴, while fewer but still the majority (65.8%) also use more than one PIED together (stacking⁵). Nearly half (48.8%) of all user respondents have used PIEDs simultaneously with one or more other drugs (‘polydrug’ use) which is consistent with the literature (Petersson, 2008; Gårevik and Rane, 2010). The most common method of administration reported (n=37) was injection by needle (78.4%) and the leg was the most popular site (52.8%). Of self-reported injecting PIED users, 75.7% indicated using sterile equipment ‘every time’ with eight not providing an answer and only one respondent indicating ‘sometimes’.

### iv. Motivations, user type and perceived benefits and risks

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⁴ Cycling refers to the practice of using PIEDs for a set period of time, based on specific short-term goals, followed by a period of non-use to maximise the effectiveness of the drugs.

⁵ Stacking refers to the practice of administering two or more PIEDs consecutively to improve the cumulative effectiveness of the drugs.
PIED users identified most commonly with the ‘body image’ user group (40.5%), followed by ‘body building’ and ‘competitive athletes’ (23.8% each). However, when asked about their primary motivations, the results indicated body image as the latent driver for PIED use which is in-keeping with the research on motivations. This was especially true for body builders – 80% of which identified ‘body image’ as their main motivation for PIED consumption. Other respondents cited multiple motivations.

To further understand the rationale for PIED use respondents were asked to propose what they considered the main benefit of using these drugs. Answers were analysed using NVivo where a priori coding was used to pre-determine predicted primary themes based on the review of literature which included: image, performance and health (see Figure 4). Emergent coding was used to identify sub-themes. Some PIED users who responded (n=35) indicated more than one key benefit, resulting in a total of 46 comments coded.

While ‘performance’ and ‘image’ were equally proportioned closer assessment of the responses revealed self-esteem as the most salient issue due to multiple references to terms including: body image, confidence, vanity and looking better. One respondent suggested, ‘I am more likely to find a long and short term romantic partner’ – a sentiment shared by other users. Of responses which were categorised as ‘performance’ based, the benefit of fast, consistent and effective ‘results’ was perceived as another primary benefit. An illustration of this was one user who suggested, ‘it [PIEDs] enables me to get closer to my physical ideal that is not otherwise possible’. Another respondent suggested that there is ‘a more favourable return on investment with regards to effort put forward in the gym with resistance training’.

![Figure 4. Thematic analysis of qualitative user responses to the perceived main benefits of PIED use](image-url)

<table>
<thead>
<tr>
<th>Primary Themes</th>
<th>Percentage of responses (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Image</td>
<td>30</td>
</tr>
<tr>
<td>Performance</td>
<td>20</td>
</tr>
<tr>
<td>Health</td>
<td>5</td>
</tr>
<tr>
<td>Recovery</td>
<td>10</td>
</tr>
<tr>
<td>Lifestyle</td>
<td>5</td>
</tr>
<tr>
<td>Wellbeing</td>
<td>5</td>
</tr>
<tr>
<td>Results</td>
<td>10</td>
</tr>
<tr>
<td>Performance</td>
<td>5</td>
</tr>
<tr>
<td>Competition</td>
<td>5</td>
</tr>
<tr>
<td>Strength</td>
<td>5</td>
</tr>
<tr>
<td>Self-esteem</td>
<td>10</td>
</tr>
<tr>
<td>Physical</td>
<td>5</td>
</tr>
</tbody>
</table>
When considering whether PIEDs are safe, the perceptions of users and non-users presented a near polarised picture (see Table 6).

<table>
<thead>
<tr>
<th>Perception of safety</th>
<th>Safe</th>
<th>Unsafe</th>
<th>Don't know</th>
</tr>
</thead>
<tbody>
<tr>
<td>User</td>
<td>73.2% (30)</td>
<td>22% (9)</td>
<td>4.9% (2)</td>
</tr>
<tr>
<td>Non-user</td>
<td>10.7% (3)</td>
<td>78.6% (22)</td>
<td>10.7% (3)</td>
</tr>
<tr>
<td>Total</td>
<td>47.8% (33)</td>
<td>44.9% (31)</td>
<td>7.2% (5)</td>
</tr>
</tbody>
</table>

*a n=41 users and n=28 non-users comprising the total of 69 who responded to the question. 17 participants did not respond to the question.

These findings appear consistent with user and non-user perceptions of the danger of PIEDs when compared with other drug types. Figure 5 summarises the mean findings from responses to a likert scale which elicited ratings of ‘dangerousness’ to health for different drug types including PIEDs, cocaine, ecstasy, ice, heroin and marijuana. Results here indicate that non PIED user respondents viewed all other illicit drug types to be overall more dangerous to health when compared to PIED users. The only exception to this is for heroin where PIED users assessed the drug to be on average 0.2 more dangerous than non-users had.

![Figure 5. Mean perceived level of danger to health per drug type and PIED user or non-user status (n=83)](image)

*1=not dangerous at all, 2=a little bit dangerous, 3=quite dangerous, 4=extremely dangerous

When asked more specifically about risk of catching blood borne viruses (e.g. hepatitis B or C or HIV) PIED users again painted an understated picture of the risk of
PIED use; this time on average suggesting that the risk of catching BBVs is just shy of ‘a little bit risky’.

v. Side effects of PIED use

The majority (68.3%) of users identified that their PIED consumption had resulted in some physical side effects (see Figure 6).

Figure 6: PIED user respondent most serious perceived side effect (n=28)

Half of all respondents (51.2%) suggested that when considering side effects, they perceived them as likely to manifest as both physical and psychological. However, a picture fast emerged that while physical changes are evident, it is the psychological motivation which underscores PIED use. Three key points emerged from respondents (n=19) regarding psychological effects: the impact on mental health; changes in temper and mood; and the increased likelihood of dependence. Firstly, depression and anxiety were cited as common consequences for those trying to stop using PIEDs. This was linked by a number of respondents to why users may become dependent. One such respondent revealed,

The main psychological issue is coming OFF. Loss of size and strength and putting on body fat and muscle size decreasing. It can make people very depressed. They are tired, lose their drive and 'mojo'. And for men, their natural testosterone production is very low or zero when they come off, so it's a compounded effect.

The other salient theme which emerged from qualitative analysis was relating to temper and mood, specifically: instability, anger, irritability, frustration and lack of control. One respondent even cited ‘over confidence. A feeling of invincibility’.
vi. Addiction

Of those who responded (n=54) to the question ‘do you think PIEDs are addictive?’ the majority (63%) indicated ‘yes’. However, when looking specifically at responses from PIED users there was a near to equal proportion of respondents who thought PIEDs are (55.6%) and are not (44.4%) addictive. A far greater divide was observed in non-users who clearly viewed the drugs as addictive (see Figure 7).

Figure 7. Respondent perceptions of PIED addictiveness per user status (n=54)

![Figure 7. Respondent perceptions of PIED addictiveness per user status (n=54)](image)

- Percentage of respondents calculations based on n=36 users, n=18 non-users, 32 non-responses

Of those PIED user respondents who indicated that such drugs are addictive, 90% provided further qualitative explanations of why they believed this. The message was clear that addiction is regarded as a predominately psychological experience based on the satisfaction of achieving seemingly unattainable results which translate to enhanced self-esteem in either image and/or performance improvement. Several users expressed from their own experience or from observation that the noticeably rewarding outcomes encourage repeated use and result in a reluctance or inability to discontinue use. An observation by a 21 year old using respondent was echoed by many other comments,

*Because for most young males around my age gap, physical appearance and muscle tone is a very important thing. I only think steroid use is addictive in the sense that it gets you the results you want fast, you DON'T want those results to stop whatsoever, well at least until you get to your highest desired lean mass group. It isn't addictive (to me) in the sense that I crave to inject it, more so that I want my physical appearance to get better and better.*

Users forwarded a notion that the rewards reaped from PIEDs are so psychologically powerful that it almost eliminates the option of stopping. One respondent suggested, *'I believe once users gain results they could not gain when naturally performing their task, they will no*
longer be able to turn around’. This sentiment resounded with others as evidenced by a range of illustrative comments, such as: ‘working out with the PEDS would seem like a ineffective use of time’; ‘massive increase in strength and appearance. This becomes very valuable especially when taken away’ and ‘you feel empowered and better while on them… once you have experienced that [PIEDs] you want to continue it’. One respondent suggested that the short-term goals and speed of reward becomes the centralising feature of using, rather than the consideration of possible long term risks.

Non-users echoed the same focus that any level of PIED addiction is primarily psychological and largely fixed by the desire to improve one’s self and body image. One perspective forwarded by non-users which was not manifest in user attitudes was the suggestion that PIED use is not an efficacious way to address self-esteem related motivations for use. Rather, it was proposed that PIEDs create an unhealthy cycle of never reaching whole or genuine gratification.

i. Attitudes toward Criminalisation

In terms of level of criminality, most PIED users (81.4%) did not align the substances they consume with other illicit substances such as heroin or amphetamine; as was suggested in their perception of the drugs’ danger and risk levels. One user did consider them to be equal in criminality and seven did not respond. There was more proportioned division in non-user respondents (n=24) with 54% indicating ‘yes’ and 45.8% indicating ‘no’ in terms of comparable level of criminality. Follow-up responses when given an opportunity to offer other comments saw one non-using respondent propose that, ‘I think this will become recognised as destructive a group of drugs as ice/amphetamines in time’.

With regard to legalisation, most users (88.6%) who responded supported the legalisation of PIEDs and non-users were more likely (57.1%), although not by such a significant margin, to reject legalisation. Analysis of qualitative responses when asked further about legalisation and generally about other comments highlighted key views across respondents. Firstly, users believed PIEDs, especially testosterone-based drugs, should be legalised because when consumed in a responsible manner the drugs were perceived to not cause significant harm. Education, appropriate non-judgemental medical consultation and even supervision were flagged as possible ways to manage any risks if PIEDs were legalised to ensure safe and informed practices (particularly regarding dosage and cycles). One respondent suggested that people are going to use PIEDs regardless of their attached criminality and therefore concluded
it is safer if done legally. The other outstanding message from users was that PIEDs pale in comparison to other drugs in terms of harm to individuals and the wider community. Licit drugs (alcohol, prescription/over-the-counter medications and tobacco) were widely cited by respondents as having a greater capacity for damage than PIEDs.

Of those non-user respondents who indicated support for legalisation (42.9%), viewpoints forwarded were very much reflective of the sentiments presented by users. Two key issues were raised by respondents in this space. Firstly, one salient view was grounded in the principle of harm reduction and the notion of free-will in drug taking. Secondly, the growth and space for illicit markets associated with prohibition of drugs was identified as a practical consequence of criminalisation. One example of this kind of reflection by a non-PIED using respondent was, ‘in principle decriminalisation allow[s] proper management [of PIEDs] as a public health issue instead of creating a market for and promotion of illegal activity in connection with their supply’.

Where PIED users and non-users also agreed, but with different solutions, was that unrealistic body image messages are having a major impact on the adoption of PIEDs. One respondent identified portrayals of health and fitness circulated on social media as an antecedent to PIED use and recommended that more needed to be done to address the ‘mental issues this is causing such as body dysmorphia which I believe is causing young people [to] turn to steroids’. A non-using respondent agreed that ‘unrealistic physical expectations’ are set by the health and fitness industry (specifically citing body building). However, this respondent questioned ‘why would we want any of these drugs [PIEDs] thrown into the mix’ if there is the potential to foster aggression given the range of other issues young men are facing, such as depression and domestic violence.

Conclusion:

It would seem the rush by various governments to harsher criminal penalties is not widely supported by users and to some degree by non-users. This would be supported by the notion
that the users of PIEDs did not align the danger of using PIEDs to more hard core drugs. Even non-users were almost equally divided on the issue of criminality of PIEDs when compared to other illicit drugs. Users are divided on the opinion as to the addictiveness of PIEDs.

The findings of this research seem to indicate that the move towards harsher penalties may in fact be a movement in the wrong direction. Rather PIEDs, and the harm caused by them, would seem to be an issue that would benefit from decriminalisation and more emphasis on the potential harms and allowing for legitimate use under supervision to be broadened.

References:

Books:


**Journal Articles:**


**Reports:**


**Government:**

Full Abstract

In Australia, many Aboriginal women have a history of experiencing significant trauma as a result of colonisation and its practices. Such historical trauma has been identified as a significant risk factor in the development of alcohol and other drug (AOD) problems. Although reports suggest that problem AOD use and associated harms are an issue for many Aboriginal women, such problems often go unaddressed due to multiple barriers, including fear, a lack of appropriate services and gaps in culturally safe practices.

This paper describes some culturally appropriate responses to working with Australian Aboriginal women who are seeking support for problems with substance use. Specifically, this paper recognizes the need for mainstream AOD services to consider the use of narrative based therapies when providing a therapeutic response to Australian Aboriginal women who are experiencing AOD problems. Currently, the most commonly used responses to AOD problems are short term and focus on changing behavior. Whilst behavior change is usually a desired outcome of AOD therapies, this paper argues that therapeutic approaches that focus primarily on behavior change may not constitute the most appropriate response to Aboriginal women affected by historical trauma. This presentation will provide an opportunity for audience members to identify components of narrative approaches that they may find useful in their own practice.
Telling stories in ways that make us stronger: Working with Australian Aboriginal women who are experiencing problems with AOD use

In presenting a case for culturally safe therapeutic practices I will be drawing on my doctoral research and the literature review from my thesis:  

_Healing in the Yarn: Exploring culturally acceptable responses to Australian Aboriginal women who have experience of feelings of shame and are seeking counselling for problems with alcohol._

**The Problem**

The relationship of complex historical and trans generational traumas (Atkinson, 2008; Denham, 2008) suffered by First Nation peoples who have experienced settler - colonisation (Wolfe, 2006) to high rates rates of alcohol and other drug (AOD) related harm has been widely documented (Brave Heart, 2004; Gray & Wilkes, 2010; Human Rights and Equal Opportunity Commission, (HREOC), 1997, 2008). The National Indigenous Drug and Alcohol Committee, (NIDAC), (2010) has reported that harmful substance use is widespread and that over 60% of Aboriginal Australians drink alcohol in such a manner that causes both short term and long term harms. Furthermore, AOD use has been found to be a major factor in high mortality and imprisonment rates, family violence and in 75 per cent of homicides (Wilson, Gray, Stearne & Saggers, 2010; Chikritzhs et al., 2007). Such harms occur despite research indicating that more Aboriginal Australians than non-Aboriginal Australians abstain from alcohol (Brady, 2010; Department of Health and Ageing, 2010).
Reported differences in the prevalence of AOD related harm between Aboriginal and non-Aboriginal people, and Aboriginal women specifically, has been attributed to many factors, including those related the genocide, historical and trans-generational trauma, ongoing racism and discrimination (Brave Heart, 2004; Catto & Thompson, 2008; NIDAC, 2010; Tatz, 1999).

The Context

It has been established (Foley, 1997; Tatz, 1999, 2001; Wolfe, 2006) that in Australia, for many years following colonisation, it was assumed that Aboriginal people would either die out or assimilate. White skin was seen as a signifier of racial superiority (Tatz; 1999; Towney, 2005) and vigorous efforts were directed at eradicating Aboriginality. Many Aboriginal children, particularly those with lighter skin, were forcibly removed from their families and placed on Missions and many Aboriginal women were subjected to forced marriages aimed at “breeding out the colour” (McGregor, 2002).

The ongoing oppression, and the hardships experienced by Aboriginal women have been described as creating such severe conditions of sustained stress (HREOC, 1997; Ranzijn, McConnachie & Nolan, 2009; Wanganeen, 2010) that the impacts on individuals have been reported as similar to those usually associated with post-traumatic stress disorder (PTSD) (Atkinson, 2008).

In addition, the deficit narratives constructed around Aboriginal Identity have contributed to the development of a range of problems, including those associated with alcohol and other drug use (Cloud Ramirez & Hammack, 2014; Towney, 2005). Such deficit narratives are familiar to many First Nations peoples throughout the colonised world (Fanon, 1961). To cite just one example, Bishop & Glynn (1999) have reported that the Maori people of Aotearoa / New Zealand have for many
decades received powerful messages that they do not measure up, as the only criteria of worth and success are those which are associated with the cultural standards of the white colonisers (Smith, 1999).

In addition to the more overt practices of colonial oppression, such as the 2007-2012 Intervention, described by Professor Triggs, President of the Human Rights Commission, as in breach of the basic principles of public international law (Human Rights Commission President Gillian Triggs criticises NT Intervention in remote Aboriginal communities, 2015), social control of Aboriginal people has continued.

Furthermore, it has been found (Sonn, 2004) that through abnormalising difference western psychology and its practices has the potential to produce new forms of social control (Bowers, 2008).

**Australian Aboriginal Women**

According to the literature, although many Aboriginal women are affected by alcohol and other drug (AOD) related harms, little research has been conducted in this field (Brady, 1990, 2014; Gray, Stearne, Wilson & Doyle, 2010). There is also a gap in knowledge in relation to Aboriginal women (and men) in urban or ‘settled’ areas as most of the research to date has been undertaken in remote communities already known to experience a high prevalence of AOD related problems (Brady, 1990, 2014; NIDAC, 2014).

The lack of research about AOD use among women from diverse cultural backgrounds and Aboriginal women specifically has resulted in a corresponding gap in services for Aboriginal women (Gray, Stearne, Wilson & Doyle, 2010; National Drug and Alcohol Research Centre, 2013; Rankine, Gregory, Tonks & Evans, 2013).
It has been established that amongst many women who experience AOD problems that the initial function of AOD use was as a form of self-medication, in other words, an attempt to numb themselves in order to avoid emotional pain (Briggs & Pepperell, 2009).

Many Aboriginal women in Australia, have been removed from their families and have grown up not knowing where they belong. Such experiences of dislocation profoundly shape a woman’s sense of identity and have been found to bear a relationship to problems with AOD use, shame and parenting (HREOC, 1997, 2008; NIDAC, 2010; Zubrick et al., 2012).

Most, if not all of the informants in this study report high levels of historical and generational trauma (Denham, 2008; Wanganeen, 2010) as well as feelings of shame about their Aboriginality which pre-dated the heavy alcohol use. These feelings were reported to be exacerbated over time as the alcohol use increased.

Nearly every Aboriginal woman interviewed in this study has experienced traumatic childhood events such as being removed from their families. Some have spoken of hiding in the bushes when the welfare officers came, unstable foster placements and being separated from siblings, and of running away, living on the streets and of finding alcohol in particular to be effective as a pain killer.

Research informs us that women experiencing AOD problems, particularly Aboriginal women, are reluctant to engage with agencies (Briggs & Pepperell, 2009). One reason cited by many informants is a fear that their children will be removed, or of coming into contact with the Police or Welfare agencies (Brady, 2010). Many Aboriginal women have experienced being taken away from their mothers by social workers or other welfare practitioners. Another barrier to seeking help is the experience of shame, a self-conscious emotion, which has been linked to AOD
problems (Briggs & Pepperell, 2009; Potter-Effron, 2002). Other concerns cited include a lack of gender specific services and a lack of culturally appropriate services (Gray, Stearne, Wilson & Doyle, 2010; Walker & Sonn, 2010). As a consequence, many Aboriginal women do not receive help for AOD problems until the emergence of very serious health issues (Brady, 2005; Ware, 2013).

In mapping the history of colonisation in Australia from an Indigenous woman’s perspective, Atkinson (2002) provides a unique line of evidence which supports the idea that unacknowledged or unresolved trauma in previous generations remains a present issue for many women. The study of Atkinson’s own family over six generations makes the point powerfully that such trauma can be linked to a range of harms, including substance use, violence and mental health issues. This echoes a statement made by Sigmund Freud over a century ago. Writing on the power of unexpressed emotion, Freud said that such feelings do not die or disappear, but will eventually emerge often in quite destructive ways. It has been reported that Australian Aboriginal women have been particularly vulnerable in terms of internalising deficit discourse.

One notable problem with the widespread application of AOD therapy modalities designed by non Aboriginal practitioners (McKelvie & Cameron, 2010) is that they may tend to focus on changing behaviour in relation to substance use and may not adequately address underpinning issues such as trans generational and historical trauma and the social context in which the problem has arisen. In addition, Covington (2008) reports that in providing AOD treatment, gender is an important consideration, arguing that AOD treatment has developed over time as a single focused intervention in order to address problems as experienced by men. Research suggests that treatment for women’s AOD problems may be ineffective unless it takes
into account the gender specific factors such as the high level of trauma, abuse and violence experienced by many women (Briggs & Pepperell, 2009; Covington, 2008). As it has been established that such experiences increase a woman’s likelihood of experiencing both negative self-conscious emotions such as shame and AOD problems (Brown, 2004, 2012; Dearing, Stuewig & Tangney, 2005; Potter-Effron, 2002) it is important that AOD treatment for women addresses issues of power, gender and oppression. (Covington, 2008; Prilleltensky, 2003, 2008, Winslade & Smith, 1997).

Importantly, for First Nation people healing also involves developing a positive account of cultural identity (Ramirez & Hammack, 2014)

**The Failure**

It has been reported that Australian mainstream AOD services have not only largely failed to address the needs of Aboriginal people (Gray & Wilkes, 2010; Wilson, Stearne, Gray & Sagers, 2010) but have, at times, demonstrated values and practices that are not supportive of an individual’s sense of cultural identity (Curtis & Harrison, 2001; McKenzie, 1997).

Until recent times, little consideration has been given to how First Nation people see things and how this differs from the worldview and experiences of the white middle class, those whose standards are used to measure an individual’s healthy mental state (Bishop & Glynn, 1999; Carvajal & Young, 2008; Fox & Prilleltensky, 1997; Prilleltensky, 2008; Sue & Sue, 2012). According to Lawson Te-Aho (2013) Western psychological discourse is not only culture bound but can be profoundly damaging to indigenous populations who have experienced settler–colonisation.

Through positioning the problem within any individual, the historical conditions that contribute to the emergence of AOD problems amongst some Aboriginal women
(HREOC, 1997) can be overlooked and furthermore, individuals may experience further feelings of deficit (Prilleltensky, 2008).

In order to conceptualise and contextualise the problems that we see amongst First Nation populations today, we must remember that until 1967 Aboriginal people were classified, in Australia, as fauna and flora. One senior Aboriginal counsellor whom I recently interviewed said:

‘I was 11 years old (in 1967) when I found out that I was now a person. Before that…well, I didn’t have any leaves or branches, so I thought that I must be an animal. We were all animals to white people’.

**Culturally Safety**

In order to provide culturally safe responses to AOD problems experienced by Aboriginal people, researchers and practitioners need to position themselves in partnership with Indigenous Australians and adopt appropriate methodologies in both research and practice (NIDAC, 2010; Lawson Te-Aho, 2013; Smith, 2012).

This would involve consulting with Aboriginal researchers and practitioners (Department of Health and Ageing, 2007), accessing information from sources such as Australian In and understanding both the cultural importance both of storytelling to Aboriginal people (Bacon, 2007) and the need to use a trauma informed lens when addressing problems that have arisen amongst Aboriginal Australians in the context of loss, grief and colonial history (Atkinson, 2008; McKelvie & Cameron, 2010; Wanganeen, 2010).

**Narrative Therapy**

One aspect of my current research is to look at the value of storytelling and narrative approaches to therapy, which can be best understood as emerging from the work of social constructionists (Denborough, 2011) who developed ideas that
challenged notions about truth, objectivity and individual knowledge, and emphasised the importance of language as a medium through which local truths could be constructed (Gergen, 2001; Hansen, 2006).

White and Epston’s narrative therapy is critically engaged with the language of representation (Besley, 2002) and can be understood as sitting within a broader movement within the social sciences, philosophy and the humanities, described as the linguistic turn (Rorty, 1967). Narrative approaches are distinguished through their engagement with the cultural work of placing personal problems back into the realm of culture and history.

Following the 1987-1991 Royal Commission into Aboriginal Deaths in Custody Tim Agius invited Michael White and other counsellors from the Dulwich Centre to provide support for families and friends affected by the death of a loved one whilst in police custody.

Agius was certain that the emergent narrative approach would prove appropriate, although, as he later recalled (Agius, 2008) Michael White, as a non Aboriginal Australian had misgivings as to his own suitability for this task.

Aboriginal families at Camp Coorong shared their stories, their yarns of loss, grief and survival and the Dulwich counsellors listened and responded. Stories of great courage, resilience and strength emerged. The manner in which the stories were told, and the ways in which they were received and responded to were described by Australian Aboriginal counsellors as making the tellers feel stronger (Wingard & Lester, 2001). This was the beginning of many partnerships between non-Aboriginal and Aboriginal workers, which continues to have a profound effect on the ways in which narrative approaches to counselling and community work are constituted and
enacted (Agius, 2008; Hegarty, Smith & Hammersley, 2010; Man-Kwong, 2004; Ncube, 2006; Towney, 2006).

Narrative approaches, which are theoretically and philosophically underpinned by constructionist ideas (Gergen, 1983; Gergen & Gergen, 1984), excavate wide fields of knowledge in order to explore how various therapeutic practices position individuals and their problems. Counselling based on constructionist ideas position problems experienced by people as occurring within a social, cultural and political context and draw from an understanding that each individual produces meaning from the narratives available to them (Drewery & Winslade, 1997).

As with other critical approaches to psychology (Fox & Prilleltensky, 1997), narrative approaches aim to address specific problems, which are always “externalised” and to formulate responses based on collaborative, ongoing conversations (White, 1997). Counsellors using narrative approaches to therapy (White & Epston, 1990) work with the client to examine the dominant narrative and excavate other less-privileged narratives that may not be as obvious (Weegman, 2010). Through this process, the dominant story may be revised, and alternate stories may emerge. Personal accounts are often multi-layered and contradictory and so uncovering diverse aspects of a person’s experience can expose hidden strengths. For example, a person who has an alcoholic story as a dominant narrative (Winslade & Smith, 1997) may start to recognise many aspects of their lived experience in which the alcohol problem was not dominant (McKenzie, 1997; Polkinghorne, 2004; Weegman, 2010).

Through such investigations, narrative therapy aims to interrogate dominant stories, listen for subjugated narratives, privilege individual insights and work with metaphor in order to construct a more positive self-account. It is, after all, through
story telling (Bacon, 2007) that humans create meaning from experience (White & Epston, 1990).

It has been widely reported that narrative approaches appear to be a respectful way of working with individuals seeking to journey away from harmful use of alcohol or other drugs. (Cherubin, 2005; Hegarty, Smith & Hammersley, 2010; Moxley-Haegart, 2009; Winslade & Smith, 1997).

Substance use problems possess lived, discursive and cultural aspects, each of which exerts power beyond the “literal” dimensions of the problem. Therefore, the role of language, and the potential of language to reconstruct a positive sense of self in client’s addiction narratives must not be overlooked, for it is only through engaging in reflexive processes such as therapeutic conversations that new discourses may be produced. Whilst there are other professional processes that focus on the biological and chemical facets of substance use, therapeutic conversations, or counselling can legitimately address the discursive space in which the relationships between AOD use and the individual and formed and maintained (Weegman, 2010, Smith & Winslade, 1997).

**Migration**

For individuals affected by serious and long-term harmful AOD use to change harmful consumption patterns, a significant change to personal priorities, aspirations and pre-occupations may be needed, which concomitantly affect one’s sense of identity (Smith & Winslade, 1997). The degree to and manner in which the individual’s sense of identity is affected depends on the type of language used when discussing the substance use and whether space is made for seeing other parts of the individual’s identity.

This is particularly of relevance when discussing the position of women.
Words used to negatively label an individual (for example, as a female alcoholic) can be counter productive as such language powerfully impacts on the way a woman sees herself, or may be seen by others. Self-narratives, that is, the stories we tell ourselves about our “selves”, are essential to our sense of who we are. When problem stories are told in such a way that may invite a person to feel inadequate it can be counter productive as it may make change even more difficult.

Narrative practices, which can include one to one therapeutic conversation, have also been developed for group and community work, using local knowledge. In recent times they have been adopted and adapted for use in a range of cultural and political contexts including Colombia, Rwanda and Gaza where Indigenous peoples face war, poverty and political oppression. Akinyela (2002) describes narrative approaches as providing pathways towards the de-colonisation of people’s lives (Denborough, 2011; Man-Kwong, 2004; Moxley- Haegart, 2009; Ncube, 2006; Omaar, 2007). Through engaging with discourse around how language is used, narrative approaches to therapy offer a possibility of psychopolitical validation (Prilleltensky, 2003). Additionally, the privileging of stories, as well as the use of metaphor has particular resonance for Aboriginal women (Bacon, 2007).

Through the exploration of alternative stories, a woman’s alcohol problem story may be re-presented in a manner that challenges the culture of consumption, de-constructs addiction and supports a migration towards a more positive self-account or preferred identity (Freedman & Combs, 1996; White, 1997).

Many Aboriginal women that I have spoken to, who have left alcohol behind, say that such strength comes from a positive self-account and a sense of connectedness – to family and friends, and to the land. They also speak about a need to re-story a sense of self - based on a positive account of their gender and cultural
identity. In order to do that the dominant story of Aboriginal deficit needs to be contextualised and contested (Cherubin, 2005; Hegarty et al., 2010; Towney, 2005; West, 2003).

Wingard and Lester (2001) wrote a book called “Telling stories in ways that make us stronger”. They identified narrative approaches as a safe form of therapy through which it is possible to tell stories in ways make us women stronger. This is critical for Aboriginal women, as healing can only occur when their stories of injustice are acknowledged and the dominant narratives constructed to serve colonial settler interests, are challenged (Friere, 1970; Wolfe, 2006).
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Comorbidity and Recovery:
Is increased mental illness a consequence of sobriety?

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Comorbidity and Recovery: 
Is increased mental illness a consequence of sobriety?

ABSTRACT: A common theme amongst people recovering from substance addiction is the development of increased mental health issues such as anxiety disorders resulting in a sense of hopelessness and despair. Coupled with this may be a perceived fear of the unknown. For instance, a long term addict recovering from a life of addiction is facing a new life filled with change, modification and variance, contrary to the life that was once known. It is therefore not surprising that these increased anxiety based emotions can often lead to relapse. Achieving any level of sobriety from drugs and alcohol often signifies merely the beginning of a person’s recovery journey and when consequent mental health concerns such as anxiety remain untreated, it is possible for these symptoms to escalate out of control, prompting a return to the life of addiction.

Keywords: Addict; abuse; family; comorbidity; relapse

Note - The terms ‘addict’, ‘abuse’ and ‘addiction’ are used in this paper regularly. It is important that the distinction be explained. Many people can use drugs and alcohol without any apparent consequences. It is only when this becomes problematic that the terms ‘addict’, ‘abuse’ and ‘addiction’ properly defined add clarity to what is happening to the person and those around them, including families.

Introduction

Recovery from substance addiction itself can be a complex journey. When one considers the impact of increased mental health concerns for a person attempting sobriety and the far-reaching consequences for their families and carers, many issues may arise. Often, these issues can be the result of underlying and unacknowledged mental health concerns. There is subsequently a need to address the often long-term and complex needs of persons living with mental health issues and addiction whilst in recovery (Davidson & White, 2007). This paper discusses the mental health issues that exist within substance addiction and the potential reasons for relapse. There will also be a discussion of the possible impact that these increased mental health concerns can have on the families of the recovering addict. Finally, this paper discusses the need for increased linkages to, and enhancements of recovery-based services for recovering addicts and their families. These services can provide support for countering the
mental health issues that are likely to arise during both the initial and longer term phases of the sobriety journey.

**The addict**

There are a variety of reasons why a person can become addicted to substances and many people often do not understand why or how they became addicted in the first place. One significant factor is social anxiety. Often, addicts report the use of substances as a solution for combating feelings of inadequacy in social settings. Phrases such as “it made me fit in” and “I felt as though I finally belonged” are all too common. This type of comment can signify social anxiety-based concerns. This is a good illustration that shows how an addiction can develop as a way of reducing feelings of inadequacy in social settings, thus creating a coexisting mental health issue.

When a person uses substances to mask these social anxieties, instant gratification takes place as a successful antidote. These anxiety-based behaviours may be then successfully masked and effectively avoided over time.

The co-occurrence of substance abuse is common among people who have any level of social anxiety disorder. A review in the United States showed that anxiety disorders predate substance use disorders in at least 75% of cases (Smith and Book, 2008). People with this disorder often report that substances help to decrease their social anxiety and addictions usually develop after the onset of this disorder (AADA, 2010-2016). Unfortunately, substance abuse can cause adverse side effects which can worsen the very symptoms they initially relieved as well as sharply increasing symptoms of mental illness or even triggering new symptoms. For example, common signs of anxiety can be excessive amounts of tension and worry, feelings of restlessness, irritability, poor concentration and insomnia. The use of a substance such as alcohol can alleviate these symptoms in the short term, but may in fact end up being the very cause of these symptoms in the longer term.

Paradoxically, the end result of substance abuse that was so successful in alleviating anxiety in the short term, becomes a normal response with its roots lying in repetition. This is one particular way that the journey of an addict can begin to evolve and a person can progress into addiction.
The relapse

For many people, anxiety-based issues are integral to their addictions. A vicious circle can form with anxiety disorders leading to addiction and addiction leading to anxiety and related disorders (Addiction & Recovery, 2016). During the addiction phase, an addict is only focused on symptoms of addiction. However, once sobriety is reached, they may find themselves lacking the ability or experience to deal with their anxiety-related issues that consequently arise.

For example, the early stages of sobriety are often associated with higher levels of anxiety, greater emotional distress, and increased stress causing craving (Sinha, 2013). These emotions alone can leave any addict highly vulnerable to the increased risk of relapse, and these effects can be compounded for the person who already has a history of social anxiety-based issues.

Drug and alcohol users often name stress-related issues and negative thoughts as reasons for relapse into addiction. However, the incidence of stressful life events alone may not be a precursor to relapse. It may be that the addicted person’s methods for applying coping skills in stressful situations are the reasons behind a relapse.

Generally speaking, coping skills are methods that a person can use to deal with stressful life situations that may cause anxiety. A person with a higher level of anxiety may struggle to cope more than others, creating a regular cycle of fear and worry. The methods that a person might employ in order to lessen this anxiety can depend upon of the nature of the problem and the most applicable means by which to address it (Phillips, et. al, 2015). For example, those with social anxiety disorders may resort to substances to reduce their anxiety when interacting with others (MentalHelp.net, 2016). This may appear to be a satisfactory coping mechanism, developing increased self-esteem and confidence.

However, when a person becomes motivated to manage their own substance problem, they need to develop new skills and supports in order to control their thoughts and emotions (Drake, et. al, 2001). A person with untreated anxiety-based issues may find this task so overwhelming that, without any support for both their addiction and their mental health symptoms, relapse may be highly likely.

People who use substances to cope with their anxiety are particularly vulnerable during their initial periods of sobriety. When their anxiety re-surfaces unexpectedly, they may not have the necessary coping skills, leading to disastrous outcomes and the removal of hope due to their
unacknowledged mental health issues. For this reason, many addicts may then view their newly found mental illness as a consequence of their journey into sobriety.

**Families and Carers**

Families play a fundamental and central role in most people’s lives to one degree or another. While the family unit is ideally one of love and support, relationship problems can certainly arise as part of the journey (Lifeline, 2010). Sometimes these problems can become overwhelming in families who support those with a mental illness and/or substance addiction. It is common for feelings of stress, anger, confusion and sadness to arise, straining and, possibly, breaking close relationships.

*Substance use in Families*

When dealing with a family member affected by substance abuse, a family will often develop significant coping skills for supporting both themselves and their loved one. This usually incorporates acknowledgement of the issues and acceptance of the situation with efforts to understand it. Boundaries are often set with strict guidelines. A family with some degree of substance abuse within it, may also experience other social problems that are connected to substance abuse such as unemployment and risk of homelessness. These problems can often become the focal point of concern in a crisis, thus deterring from the actual cause of the problem (Substance Abuse and Mental Health Services Administration, 2004), and the underlying issues remaining largely unacknowledged.

There are many patterns that can be present in families attempting to support someone with an addiction problem, and these can include negative communication, carer inconsistency, carer denial, anger and unrealistic carer expectations (Substance Abuse and Mental Health Services Administration, 2004). These patterns can create a complex journey with the potential for many additional and unforeseen issues arising, ultimately resulting in much trauma and grief for the family unit with the impact prevailing over an indeterminate timeframe.

*Mental Illness in Families*

Mental illness can also have a significant impact on families. Mental disorders impact not only individuals but also on those around them. This is because much of the care is actually provided by the family itself. Furthermore, many family members who are providing care are at a greater risk of developing a mental illness themselves, due to the immense stressors linked to the caring role. Particular needs for carers of someone with a mental illness are similar to those caring for
a person with an addiction problem. They require support for dealing with challenging issues; education about the illness to provide understanding and empathy; and, respite care (AIFS, 2008). The challenge for families is to be able to care while minimising the associated risks to themselves.

*Comorbidity in Families*

Comorbidity in substance use can have a very heavy impact on both the addict and their families. When family support is reduced, this can be associated with negative consequences. Families often feel rather alone in their efforts to cope with their loved one’s comorbidity issues and this can lead to increased stress levels due to their inability to solve problems. Some family members experience exasperation and frustration at signs of an imminent relapse but feel helpless to prevent it (Mueser & Fox, 2002).

When increased mental health issues such as anxiety arise during the complex journey of sobriety, the family may be faced with the need to discover entirely new coping skills with a completely different approach in their caring. This can often place a family under much stress, as the glimmer of hope seen in sobriety might fade. As families and carers are often on the same journey as their loved ones, through both the addiction and the recovery phases, the stressors of increased mental illness can be significant.

*Brian’s Story*

(Used with permission. Personal communications, 2016. Named changed to protect privacy)

Brian is a middle aged man in his 50s. He has experienced sexual abuse and much bullying and has always felt like somewhat of ‘an outsider’. Brian also believes he has a learning disorder. He reports a very difficult childhood with an overbearing father. Brian feels like an underachiever and that he is to blame for two failed marriages. He has been an addict since his early twenties, consuming substances such as alcohol, marijuana and LSD. He believes alcohol is his major addiction and still drinks small amounts each day. Brian has never attempted to fully engage in long term sobriety, but has tried for short periods before relapsing. When asked about his reasons for his addiction, Brian said:

“My awareness of the reasons I drink are based on immediate stress relief. I have had a lot of stress in my life that has made me very anxious. Of course it is important to note that anxiety is often pervasive and a fundamental reason behind wanting to feel good is via alcohol and drugs”.
Brian agrees the stressors in his life including emotional and socio-economic issues were temporarily but effectively decreased with the introduction of alcohol and other drugs. For Brian, his anxiety is ever-present, often leading to bouts of depression, which largely remain untreated. He has tried many methods for decreasing his mental health issues including CBT. On one occasion he was prescribed anti-depressant medication which made him feel suicidal. His views are that ‘CBT is not a universal cure, but it can help at times’.

Currently, Brian tries to deal with his anxiety in the best way he can manage and he feels that consuming small amounts of alcohol is his best coping method. Brian feels that he has lived with anxiety for so long that it appears to be in some way integrated into how he perceives life in general. Brian finds traditional treatment ineffective for him. He feels that experts who talk without understanding his personal issues often create negative responses in him that prevent him from seeking further treatment. Even though he has often sought the advice from those with lived experience, none of it has stopped him using alcohol. Brian believes that his anxiety would greatly hinder his efforts at further sobriety attempts. In essence, Brian wishes to live in a manner whereby he can be true to himself and others. He believes that not being in the grip of anxiety and substance use would be a desirable place but it might be only partially achievable.

**Michael’s Story**

(Used with permission. Personal communications, 2016. Named changed to protect privacy)

Michael is a man in his 60s who has had some form of substance addiction for at least 35 years, including alcohol, heroin, amphetamines (speed and ICE) and various medications. He is also diagnosed with Bipolar II disorder. He has attempted sobriety many times during his life, usually for short periods lasting up to 6 months at a time. For Michael, his thoughts and feelings whilst attempting sobriety are generally very hard to handle and he attributes much of these thoughts to his mental illness. His feelings can become so intense that he often finds it hard to even get out of bed. Michael does attempt meditation and often goes walking, but for the majority of the time he simply accepts the reality of the situation and tells himself that his thoughts alone will not kill him.

Michael has attended many rehabilitation treatment centres. When he left each rehab he felt he either “wasn’t ready to face the outside world, or just developed the typical addict’s syndrome and ‘used’ because it was all too much”. Michael believes that his feelings of anxiety during sobriety are caused by his mental illness, making it harder for him to continue due the extra
pressure these feelings create. Michael says that when things are going well in his recovery journey he does not seek support, due to the fact that he gets “sick of being dependent on others, and gets very tired of having to talk to people about his past all the time”. Michael is currently seeing a new counsellor and he reports that he will see how that goes.

When asked what he sees as the most important thing in his recovery journey, Brian said that “the most important thing for me is to get back my values and morals that sit well with me. I believe everyone has different values and morals and to have my own values and morals is the most important thing for me”.

Michael says that he does not agree with Alcoholics Anonymous (AA) or Narcotics Anonymous (NA) as he feels they do not fully acknowledge his mental illness, which was evident long before his addiction, and which he believes was the ultimate cause of his addiction. He does not believe it is helpful for him to continue to re-live his past, and that the AA and NA philosophy generally makes him feel guilty about his past behaviour in addiction. Michael feels AA and NA seem to want to control his thoughts and behaviours rather than provide support. He feels that by listening to addicts’ stories over and over again makes him more depressed about his own situation.

**Conclusion**

The above two case studies have many similarities. Both these men have experienced long term addictions and have reported some form of mental illness before the addiction took hold. Furthermore, both men stated that their mental illness was a probable cause of their addiction, or at least a contributing factor in it. In both cases, the subjects said that their increased mental illness negatively affected their quest for sobriety. They believed this was due to not having the coping abilities to deal with these feelings in an appropriate manner.

It is clear that both men are very aware of their issues and how their feelings affect their behaviour and this is evident in their previous attempts at sobriety. However, they were both unable to obtain appropriate support to assist them in their journey. It is also interesting that a common theme among these two stories concerns their value system which was one of the most important factors for them.

Therefore, is it possible that current addiction recovery services are more focused on the physical aspects of sobriety rather more holistic aspects of care at the psychological, emotional and spiritual level? Is it possible that these recovery services are more outcome driven and less
person-centred? Is it possible that we are imposing a value system upon recovering addicts that does not fit the individual’s own value system, thus increasing feelings of anxiety during the recovery journey? While these are merely two case studies from potentially tens of thousands per year, these two gentlemen have provided an honest account of their own, personal journey, with many similarities between them that could be reflective of the spectrum of the broader population.

The conclusion is simple.

These studies suggest that addicts need a more holistic approach on their journey towards sobriety as they are likely to be confronted by underlying mental health issues that were previously unaddressed.

**Carer Survey**

Mental Health Carers Arafmi NSW Inc. (2016) recently conducted a survey of carer members in order to study the effects of comorbidity on families. The survey focused on asking carers whether the mental health issues of their loved ones increased during times of sobriety. The overwhelming response was that the person’s mental health issues and psychological symptoms certainly appeared to increase during attempts at sobriety. One common theme showed that the upshot of sobriety simply allowed the mental illness to become more apparent.

The survey also queried by what means families deal with these increased mental health issues and how this made them feel. Responses included feelings of confusion, helplessness and difficulties coping with mood changes. Of particular note is one respondent who, when asked how they dealt with increased mental health issues, stated “…but have got to a point where I tend to avoid him. If I get too involved, I get depressed myself and have feelings of helplessness. I’ve had to distance myself to protect my mental health and wellbeing”.

When asked whether the struggle with sobriety was a precursor for increased mental health, or if increased consumption of substances impacted existing mental health issues, the results were varied. Some responses indicated that while substances may calm the person down, the family might start to worry about the negative side effects such as poor personal care and feelings of guilt. Other responses were that while substance use could have a numbing effect on mental issues, when those effects wore off, the symptoms substantially increased. The overwhelming response was that mental distress leads to struggles with sobriety.
Finally, when asked if there were any support services available, some respondents advised that they were aware of support services, although their loved one was unwilling to attend because they were either specifically a mental health service or an addiction service. Al-Alon and Nar-Anon were mentioned frequently. One particular respondent indicated a peer-led support service that focused on both mental health and addiction issues which is apparently successful. While some responses indicated there was support available, many respondents had difficulty in finding any support at all when they were dealing with both substance addiction and mental health issues simultaneously.

The outcome of this survey clearly showed that mental health issues can greatly increase during the sobriety journey with negative impacts on families. While families and carers seem to have some support available to them, much more effort is required in this area to increase support for those providing care to someone with comorbidity issues. This is evident in the following response from a carer who states that “I am constantly on alert for any and all symptoms of distress which could escalate to illness or using. The price of wellness is forever watching”.

The Issues

Current statistics show the relapse rate for drug addiction is 40 to 60 percent following rehabilitation treatment and almost 50 percent of individuals with mental disorders are also affected by substance abuse (recovery.org, 2016). Thirty-five per cent of people who use drugs also have a co-occurring mental illness, poorer mental health and poorer social functioning (National Drug Strategy, 2010-2015). A clinical review conducted in the United Kingdom, reported that 28 percent of individuals with a substance abuse problem will also have an anxiety problem (Scott et al., 1998). Furthermore, the National Drug & Alcohol Research Centre in Australia (2005) reported that the chance of a relapse within three months after detoxification treatment is at least 79 percent (recovery.org, 2016), with detoxification generally lasting for a shorter time period and not being as focused as rehabilitation. These statistics show that there is a great need for supporting people with mental illness and drug addiction, especially during the early stages of their recovery.

This is particularly concerning for people with pre-existing anxiety issues and psychosocial disabilities. Will they be able to cope with the stressors of life without the aid of substances? Will they be able to successfully continue sobriety whilst enjoying life at the same time? For the addict with anxiety-based issues, these issues are of great importance.
Thus, there is a great need for more linkages to specific services for this fragile cohort. Currently, there appears to be very little support services for recovering addicts under the Australian public health system, and in fact, the reality for most recovering addicts is that the only attainable and fee free option for community support are peer delivered services such as Alcoholics Anonymous or Narcotics Anonymous. These services are excellent in providing exceptional strategies for maintaining sobriety, but offer little support for a person’s mental health issues. While it is common for privately run rehabilitation services to offer follow up support for recovering addicts, these services are not readily available to the general public. As a significant number of recovering addicts are living in socio-economic distress, including unemployment and the risk of homelessness, these services remain largely unattainable.

Suggestions

This section recommends a number of strategies to address the current service gaps affecting people with co-occurring substance abuse and anxiety-based issues. These suggestions cover changes to mental health services, addiction services, GP services and support services for families and carers, and concentrate on the enhancement of existing services in both the Alcohol and Other Drug (AOD) and Mental Health sectors.

Mental Health Services

The Australian Government currently has an excellent initiative for people experiencing psychosocial disabilities known as the Personal Helpers and Mentors Service (PHaMs). This national government initiative is aimed at assisting people with a severe and persistent mental illness to live independently within their community. Participants are not required to have a formal clinical diagnosis of mental health in order to be eligible for the service (Department of Social Services, 2014). The idea is that the eligibility requirements relating to PHaMs can be extended to provide the same support for those recovering addicts who are experiencing any level of anxiety or psychosocial issues directly relating to their sobriety journey.

A similar approach could be adopted for the Australian Government initiative Partners in Recovery (PIR). The aim of PIR is to support people with severe and persistent mental illness, their carers and families by coordinating and facilitating services across multiple sectors to work collaboratively (Department of Health, 2014). Once again, the eligibility requirements could be extended to include those recovering from addiction problems with anxiety based issues. In this instance, a person recovering from addiction and experiencing anxiety might
greatly benefit from the increased linkages to services that PIR can offer, thus enhancing the prospect of a successful recovery.

Lastly, the Support for Day to Day Living in the Community (D2DL) initiative of the Australian Government aims to support people with severe and persistent mental illness who experience social isolation to participate in social, recreational and educational activities within their community (Department of Health, 2016). This is an important aspect of recovery for people with a mental illness and those experiencing anxiety based issues due to the complex journey of sobriety should not be excluded from this type of scheme. Peters (2015) argued that the key to combating addiction lies in social connection and people experiencing mental illness as a consequence of sobriety have a significant need to be socially included in order to have a better chance at avoiding relapse.

Addiction Services

Concurrently, when the existing Alcohol and Other Drug (AOD) services are considered, there is a great need for more mental health provision within each service. While there are in fact many rehabilitation centres that do acknowledge comorbidity, little is done within the public sector to counter the anxiety-based psychosocial issues that can arise post treatment. A suggestion to address this issue is twofold. Firstly, there is a need to enhance addiction treatment services by having the provision of a mental health counsellor within the service itself, who is employed for the specific task of providing mental health support for those receiving treatment for addiction problems. Secondly, in order to counter the mental health problems for the addict once back in the community and the high potential for relapse, ongoing community-based counselling needs to be made available.

GP Services

The Australian Government currently has a scheme called Access to Allied Psychological Services (ATAPS), which enables GPs to refer people to mental health professionals and counsellors (Department of Health, 2015). There is also the Better Access to Psychiatrists, Psychologists and General Practitioners through the MBS (Better Access) initiative which aims to improve treatment and management of mental illness within the community (Department of Health, 2015). Currently, the GP is required to complete a mental health plan in order to refer patients to these initiatives, and the eligibility for these services could be extended to those recovering addicts who are experiencing any level of anxiety based issues directly related to
their recovery from substances, thus effectively reducing the amount of anxiety that can be a trigger for relapse.

**Family Support**

Family support can also be a crucial element in the recovery of a person experiencing substance addiction. Often, due to the nature of the addiction itself, family relationships may be strained or even broken, and re-contact with family members can be a very important step in the recovery process. Furthermore, family members may have no clear idea of how to reconnect with their loved ones, which makes support for families a significant issue.

A suggestion may be to establish a pathway for families of recovering addicts with mental health issues to enter into the public health system via existing Government based mental health carer services. The Australian Government promotes a scheme called Mental Health Respite: Carer Support (MHR:CS) which supports carers of people with mental illness by providing respite, social activities, counselling, case management and education (Department of Social Services, 2015). This initiative is facilitated via various NGOs throughout Australia. There is no reason that families and carers of those supporting a recovering addict with mental health issues or psychosocial disabilities should not have access to these services.

**NDIS Services**

Due to all of these initiatives currently transitioning into the National Disability Insurance Scheme (NDIS), there is a strong argument to act immediately in order to ensure that these services are adequately funded and supported to provide this extra benefit. This might include the provision of support workers who are trained in both Mental Health and Alcohol and Other Drugs to be employed within these services, and this may be referred to as the ‘comorbidity model’ of current services. It should also be noted that the criteria for the NDIS states that an individual must “have a significant and permanent (or likely to be permanent) disability, or a need for early intervention” (Mental Health Australia, 2016). It can be argued that an early intervention for a recovering addict would consist of treatment and support for anxiety-based issues relating to the sobriety journey, in order to reasonably intervene prior to a potential relapse that could see the person placed back into a rehabilitation service. This is not dissimilar to providing care for those recovering from mental illness post discharge from hospital, with a view to avoiding further hospitalisation. The NDIS will provide supports for eligible people to assist in independent living, build social capital, and develop financial and tenancy management skills. These are often the very abilities that many recovering addicts do not
possess. It is the lack of these abilities that can be a major cause for anxieties leading to psychosocial disabilities in the recovery journey.

Conclusion

The National Drug Strategy 2010-2015 states that socially inclusive approaches are needed that recognise the particular vulnerabilities and needs of disadvantaged groups (Commonwealth of Australia, 2011). This paper has focused on the specific needs of the recovering addict with pre-existing mental health issues, whose mental health might be significantly affected via the complex journey of sobriety, and the support required for their families and carers. The dark reality is that up to one-third of all people attempting recovery from substance abuse will experience ongoing anxiety-based issues, which can greatly hinder the recovery process. This significant figure presents a valid argument for more support to be made available for this cohort.

Davidson & White (2007) argue that services should instil hope, be person and family centred, offer choice, build upon each person’s and their family’s strengths and consider the overall wellness of a person with both a mental illness and addiction. These values can be in operation across all services for all people, regardless of the service type. The above suggestions for addiction services to be closely linked into existing mental health services should be viewed as a positive early intervention, effectively beginning with a referral process whilst the recovering addict is in treatment. This model of care has the potential to create a valid pathway for the ongoing support of both the recovering addict and their families and carers. This paper concludes with the following quote:

“Treatment in parallel and separate mental health and substance abuse treatment systems....is remarkably ineffective” (Drake, et. al., 2004).
References


Title: Could Considering Addiction as an Ecological Trap provide a link between Public Health and Clinical approaches

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Could Considering Addiction as an Ecological Trap provide a link between Public Health and Clinical Approaches?

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Abstract: Framing addiction as an ecological trap may provide a parsimonious, non-judgmental and succinct explanation of addiction which largely matches observation. Considering addiction as an ecological trap suggests addiction is a species and thus a public health issue rather than an individual issue as it suggests that addiction is an expected consequence of exposing the neurobiology of humans and other species to particular products or activities. The neurobiological dopamine/pleasure pathway is identified as an element in the development and maintenance of addiction when it is activated by some substances or behaviours and so acts as a mechanism for developing addiction.

It is possible that considering addiction as an ecological trap may link treatment and public health responses to addiction and suggest treatment interventions that are informed by a public health perspective. This paper raises these issues and identifies some of the implications for institutional and therapeutic responses to addictions.

Key words: Ecological trap · Addiction model · Neurobiology · Treatment · Public Health · Ecological intervention

Introduction

Historically in medicine, addiction described the connection between an individual and a substance and was demonstrated by withdrawal effects when the substance was removed. This operational definition of addiction was useful for drugs such as opioids and alcohol, less useful for cannabis and nicotine addiction and not at all useful as a definition of behavioural addictions. Contemporary definitions of addiction regard it as “a primary, chronic disease of brain reward, motivation, memory and related circuitry” ¹ not tied to a specific exogenous substance and with an eponymous section in DSM5 that includes substance and behavioural addictions ². Addiction has been attributed to numerous physiological and psychological effects including neuroadaptation to addictive substances ³, ⁴, self-medication of anxiety disorders ⁵, ⁶, stress and deprivation ⁷–⁹, and genetics ¹¹–¹⁴. However, the predominant community view may be that addiction is a moral issue caused by character flaws in the individual. This pejorative view of addiction may arise as addictive behaviours are related to personal choice in the sense that in most cases the individual is not forced to engage in addictive behaviours, or consume products but does so deliberately. This has at least the appearance of a choice element in addiction and consequently the view that individuals who consistently make choices harmful to themselves and those around them must be flawed in some fundamental way.
**Ecological Traps**

A simple and a refreshingly non-blaming explanation of addiction may come from ecology where addiction can be regarded as an ecological trap. An ecological trap is defined in ecology as occurring where Human Induced Rapid Environmental Change (HIREC) results in ecologies in which organisms are “unable to accurately assess the fitness value of possible habitats, mates, food items or other resources” entrapping individuals in disadvantageous choices. The HIREC has been closely associated with the study of environmental traps however environmental changes that are not human induced can also produce environmental traps. A trapped individual makes choices favouring options associated with lower fitness rewards. The effects of ecological traps can be mild, or in an environment of limited resources can lead to catastrophic consequences for both individuals and populations.

What constitutes rapid ecological change is a species-specific relationship between the speed of environmental change and the speed with which the species can adapt genetically or behaviourally to the change. This means a rapid change for a fast breeding organism - such as bacteria, may be measured in hours or days whereas in humans with 30 year generations and slow genetic evolution, rapid, may constitute change over centuries.

Ecological traps (also called environmental traps) have been observed in mammals, birds, reptiles and insects. An organism in an ecological trap expresses a behaviour developed in a particular context that as a result of HIREC becomes abnormally under or over expressed in response to a new set of environmental signals. Overexpression may be associated with the removal of environmental limiting factors through increased availability and or the development of supernormal stimuli leading to harm from over expression of previously adaptive behaviours in maladaptive ways.

An example of an ecological trap is the behaviour of the male Giant Jewel Beetle that attempts to mate with beer bottles, which by chance produce light colouration associated with the female of the species at supernormal intensity. This makes the bottle an irresistible mating choice for the male. An anthropogenic accident or, HIREC, creates this ecological trap as an unintended consequence of the manufacture and disposal of brown beer bottles.

The mating behaviour of the male Giant Jewel Beetle in response to particular visual cues is likely to be advantageous to the beetle outside their HIREC environment. However in the presence of widespread counterfeit cues from beer bottles the behaviour results in the allocation of energy and resource to an activity that instead of being fit in ecological terms is utterly ineffective, wastes energy and may ultimately harm both the mating success and survival of the affected beetle. Other often cited examples of ecological traps are the ingestion of indigestible objects which appear to albatrosses and turtles to be food and St Kitts monkeys that crave alcoholic cocktails, presumably driven by an evolutionary history favouring the consumption of energy rich foods.

**Addiction as an Ecological Trap**

To frame addiction in humans as an ecological trap requires identification of an environmental stimulus which has been altered by HIREC leading to over expression of what would once have been an adaptive response.
Addictive behaviour has been linked to neurological processes such as the reward/pleasure dopamine system, but also adrenaline, serotonin and glutamate systems \(^7,18\) with the dopamine system being particularly associated with addiction \(^19\). This may occur when either an exogenous substance such as opioids \(^20\) directly activate receptors in the dopamine system or where a behaviour such as gambling releases endogenous chemical triggers that activate this system \(^21\).

The Incentive Sensitization Theory of Addiction describes a mechanism for the development and maintenance of addiction that links environment genetics, and behavioural history to changes in these neurotransmitters. This theory suggests that addiction is the sum of behavioural changes associated with sensitization or hypersensitivity to the incentive motivational effects of substances and associated stimuli. This is a result of changes in the mesocorticlimbic systems that attribute a high salience of reward associated activity. \(^22\)

The dopamine system is so well stimulated by opioids that it has been called the opioid pathway and the effect that opioid antagonist medications have on alcohol and gambling addiction implicates dopamine in these addictive processes \(^23\). An essential difference between people affected by addiction and non-addicted people may be the individual’s ability to exert executive control over the behavioural drivers resulting activity in the dopamine/reward pathways.

The dopamine system has been described variously as the reward, pleasure or persistence system. Stimulation of this system in response to hunting/gathering activity, is likely to have been selected in an environment of predominant under supply of food/energy. Until as recently as 2013 more humans have died of starvation than over eating \(^24\). This suggests that evolutionary pressures on many species including humans’ favoured enthusiastic participation in behaviours associated with hunting, gathering and consuming high energy foods, as is observed with the St Kitts monkeys.

The compulsive sexual behaviour of some internet pornography users in response to supernormal stimuli accessed on the internet may be another human example of a behavioural addiction arising from an ecological trap and may parallel the experience of the Giant Jewel Beetle. Humans in a pre-HIREC environment, finding, mating and successfully breeding with mates was probably a time consuming process when compared to the availability of sexual stimuli on the internet. The compulsive user of internet porn can find a new sexual partner every few seconds and ejaculate in response to these stimuli at frequencies beyond the usual limits of a human males sexual responding in a phenomenon known as the Coolidge Effect \(^25\). The result is social, physiological and psychological disorders that can be debilitating for the individual. If compulsive sexual behaviour is regarded as an addiction, this example is recognisable as a behavioural addiction operating as an ecological trap.

As in the sexual stimulation example above, a common component of the HIREC contribution to addiction may be the loss of environmental limiting factors on behaviour or consumption. In the human version of pre-HIREC environments with scarce resources and where a diverse set of behaviours is required to survive, the opportunities for compulsive or addictive participation in any particular behaviour would be limited.
For example, the opportunity to become alcohol dependent may not exist where an individual has to brew their own alcohol, where fermentable fruit or materials are only seasonally available and where the time to be allocated to brewing has to be distributed between numerous competing priorities each vital to survival. The availability of addictive substances is a key issue in addiction and in this sense public health policy interventions that focus on advertising, price, availability, exposure and access can be viewed as recreating some of the natural limits occurring in a pre HIREC environment.

**Individual Vulnerability to Addiction**

If the HIREC environment exists for whole human populations and if the mechanism for addiction is a ubiquitous feature of human neurobiology, the question arises - *why don’t all people become addicted to addictive substances or behaviours?* The ability of non-addicted individuals to use substances and exert executive functional control to moderate their rewarding effects to prevent addiction is a result of both internal and environmental factors. However Robertson 15 have observed that in other animals the “susceptibility to getting trapped can be age, sex or condition specific in predictable ways” and gives as example that “younger, lower ranking, or lower condition animals [with] less access to high quality foods should be more susceptible to being trapped”. These authors also observe that personality variables such as “impulsivity, aggression and neophilic traits may predispose individuals to being trapped”.

The increase in vulnerability to addiction associated with socioeconomic deprivation may be a product of the ecological trap nature of addiction, or simply where the range of options available to individuals decrease, their vulnerability to addiction ecological traps may increase. The relationship between impulsivity, novelty seeking and aggression in humans within addiction has been widely noted and may parallel Robertson’s 15 observations of ecological entrapment in other species. In a human population individual characteristics such as personality, genetics, specific psychological states and chance may determine who will be vulnerable to addiction in a similar way to vulnerability to ecological traps in other species.

**Freewill and Rational Control of behaviour**

Freewill, and especially a concept of rational freewill, in humans may be both an argument against addiction as an ecological trap or be an explanation of why ecological traps have not previously been tied to addiction. Freewill is tied to the western legal system and many religious doctrines which assume most people have the capacity to make rational decisions that drive their actions. Autonomous freewill based decisions are widely assumed to be driven by rational thought and logical process and based on belief.

However, an emerging body of evidence suggests that much human behaviour is repetitious or habitual and that behaviour precedes thought, or even that thought operates more as a rationalisation of rather than a driver of behaviour. For example, Obsessive-Compulsive Disorder has been thought of as an anxiety disorder where fears are triggered by specific beliefs, however, an alternative possibility with some empirical support is that these fears serve to rationalise or explain habitual and repetitive behaviours that are otherwise unexplainable for the affected individual 28.
Another approach to the lack of rationality in human behaviour comes from the Behavioural School of Economics. Within this school of thought, Kahneman has expanded on the work of such writers as Stanovich & West suggests that humans have two decision making processes - Type 1 and Type 2 and, that Type 1 is the default type. In this model Type 1 decision making is characterised by decisions that are impulsive, rapid, prejudiced and habitual. Type 2 decisions are slow considered and logical but also uncommon. This model suggests that Type 1 decisions are the default type and are more likely to be made when the individual is under pressure or in times of stress. Though conceived of as an economic model behavioural economics may shed light on some aspects of addiction. In particular, the difficulty people experience changing addictive behaviours and the chronic relapsing nature of addiction.

**Implications for Treatment and Policy**

Framing addiction as an ecological trap has treatment implications. If addiction is an ecological trap then treatment interventions aimed at developing well informed users who can make rational choices to limit their use of substances or their involvement in addictive behaviours may be unrealistic. Instead treatment interventions using the public health approach at a micro level aimed at assisting the client to change their personal ecology in ways that limit their exposure to substances or activities may be more effective.

Therapeutic interventions in addiction have tended to have a multitude of foci, counselling to help the client understand themselves, behavioural help to effect self-change, family interventions, peer support and psycho-education to help clients understand their addiction. Regarding addiction as an ecological issue suggests another foci- to help clients change their environment. Clinicians using a variety of treatment modalities have implicitly understood this however regarding addiction as an ecological trap may add to treatment by focusing the client on changing their personal environment or ecology giving ecological interventions the same priority as the first three treatment goals. Ecological interventions would help those affected to decrease their personal access to the addictive agent by making enduring changes to their environment and include existing approaches such as exclusion from gambling venues, taking disulfiram to limit alcohol use and making profound changes to routines, associates and personal habitat.

As affected individuals are likely to arrive at treatment sharing the predominant moral model of addiction they may also be assisted to change by being given an introduction (appropriate to their culture and capacity) to neuroscience and concepts of ecological traps, however, the aim of treatment remains the client developing a rational for making of profound changes to their own environment and in counselling receiving options and practical help to achieve and maintain these changes. If addiction has features of an ecological trap then this may be more effective in in achieving and maintaining change than concentrating on insight or understanding psychological models.
Discussion:

From both the public health and treatment perspective, regarding addiction as an ecological trap may accurately reflect practice and strategies that have been observed to be effective. Framing addiction as an ecological trap has advantages. It combines the principles and approaches used in individual clinical interventions with those used in population level public health interventions. The former are focused on assisting individual to change their personal environment and the latter with achieving these aims at a population level. It also broadens the addiction discussion from a focus on individual responsibility to being a public health issue and suggests research on addiction needs to have an environmental view and draw on disciplines such as public health, psychology, sociology and neuroscience.
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