Pirates with Psychopathic Personalities?

The role of sub-clinical and normative traits in illegal streaming and downloading of media

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Highlights

- We used a registered report with an internal replication to study media piracy
- We used trait psychopathy, five-factor model and RST traits as predictors
- Low scores on inhibition traits from TriPM and FFM predict piracy behaviour
- Open responses detailing reasons for piracy focus on media price and accessibility

Abstract

There is limited research on the individual differences that may contribute to engaging with digital media piracy. Previous research has primarily focused on music piracy, but more work is needed on contemporary issues in film and television piracy. Here we present two registered report studies exploring of the role of psychopathic, and in a second sample Five-Factor and Reinforcement Sensitivity Theory, trait dimensions in engagement with digital media piracy and normative deviance in an international (N = 351) and a US sample (N = 321). Overall, we find that traits associated with low self-control (Disinhibition, Conscientiousness) were important for explaining engagement with media piracy and identify themes in reasons for engaging with piracy or not that in Content Analysis.

Introduction

Digital media 'piracy' is the act of uploading, downloading or streaming non-purchased copies of music tracks, films and other media. Television and film digital piracy is an increasing problem, facilitated by easy access to pirating technology over the internet. The digital piracy tracking company MUSO reported that, for example, the last season of the popular TV show 'Game of Thrones' was illegally downloaded over 66 million times in one format of media piracy alone (MUSO, 2019). Media piracy is part of a group of illegal activities that have been termed 'microcrimes' (YouGov, 2016) which are illegal activities that have low immediate interpersonal consequence and are known to be conducted by many individuals in society. In a recent survey of UK residents' engagement with 'microcrimes', the polling company (YouGov, 2016) found that 28% of respondents self-reported illegally streaming and 25% self-reported illegally downloading television shows, movies or music. Despite the financial and moral implications of media piracy, there is very little contemporary research exploring individual differences that may contribute to piracy. Media piracy and microcrimes are distinct to much of the broad existing literature on criminal activity as these behaviours are generally more accepted by some in society, have limited immediate impacts on other people and they can be relatively easy to commit. Thus, there is a critical need for empirical research on these highly problematic behaviours that can, in turn, result in the development of targeted risk detection and intervention for illegal activity.

Digital media piracy is illegal; however, it is different from many of the crimes typically studied by psychologists and criminologists: (*i*) it requires little expertise (due to accessibility of modern technology); (*ii*) it is widespread; and (*iii*) it has prosocial implications (social groups bonding over shared television/film knowledge). Of relevance are psychopathic personality traits, which have been suggested to be generally useful in explaining criminal behaviour (DeLisi, 2009, 2016). This registered report describes planned research that will collect two samples of participants from the UK and US to investigate the extent to which such psychopathic personality traits and related personality measures explain variance in digital media piracy and microcrimes.

In this paper, we refer to the triarchic model of psychopathic personality (Patrick, Fowles, & Krueger, 2009). Explicitly developed with regard to both biological and psychological referents, the triarchic model is meant to integrate across different, and sometimes conflicting, conceptions of psychopathy. Specifically, the triarchic model conceptualizes psychopathy in terms of three phenotypic constructs: *Boldness, Meanness, and Disinhibition.* Boldness entails social dominance, venturesomeness, and an emotional resilience to stressors, and is thought to reflect individual differences in sensitivity or responsiveness of the brain's defensive system (i.e., amygdala and related limbic structures). Meanness involves a callous disregard for others, aggressive resource-seeking, and an inability to form close personal attachments - it is conceptualized as agentic disaffiliation, a motivational orientation in which pleasure and satisfaction are actively sought without regard for and at the expense of others (Patrick et al., 2009). Finally, Disinhibition reflects impulsive-externalizing tendencies, including impaired control over urges, difficulty delaying gratification, low frustration tolerance, and deficient emotion regulation - this dimension is theorized to relate to impairments in anterior brain systems governing behavioural restraint and affect regulation in situations calling for "top-down' control (Patrick et al., 2012). Importantly, within this model Boldness and Disinhibition are largely orthogonal and show separate biological and behavioural correlates (Patrick & Drislane, 2015). There is very recent research that has suggested that there may be complexity in measurement of the triarchic model of psychopathic traits (Lynam, Miller, & Collison, 2019; Vize et al., 2019). Our work contributes to these debates by providing a novel external variable (media piracy) for examining the effectives of triarchic measurement as well as making more triarchic psychopathic personality datasets open access.

Previous research on (typically music) piracy has used traits that readily fit within the triarchic psychopathy framework. For example, low self-control (a component of Disinhibition), risk-sensitivity (a component of Boldness), and sensitivity to peer influence (the lack of which, could be considered part of Meanness) have been examined. The early research on music piracy highlighted how low self-control, as well as exposure to informed peers, increased illegal downloading of music

(Higgins et al., 2006; Hinduja, 2012). The finding that low self-control relates to music (Brown & Krause, 2017; Brown & MacDonald, 2014; Gunter et al., 2010) and other forms of media piracy (Donner et al., 2014) appears robust. Similar results are found when risk-taking is used as a predictor (Zhang et al., 2009). However, many studies also highlight that self-control and risk-taking are not risk factors by themselves; rather there may be an additive risk for those with peers who are active in media piracy. Multiple studies from a variety of locations, including Hong Kong (Cheung, 2013), Canada (Miranda & Kim, 2015), Poland (Tomczyk, 2019) and the US (Malin & Fowers, 2009), recognise the role played by peer engagement with media piracy alongside low self-control. This sensitivity to peer influence is important to consider when discussing psychopathic or 'antisocial' traits in terms of a unified theory of law breaking. Here, to be sensitive to peer influences one must be aware of others' activities and attitudes. In this case, the engagement in what is 'antisocial behaviour' to society can be driven by *prosocial* behaviour in one's proximate social networks. This is similar to how individuals with more fearless psychopathic traits can engage with 'heroic' behaviour (Patton et al., 2018; Smith et al., 2013) and risk-taking in prosocial recreational contexts (Satchell et al., 2018).

Overall, from the above literature on music and similar piracy, we could predict that psychopathic Disinhibition (low self-control) and Boldness (high risk-taking) would lead to increased media piracy behaviour. Predictions about the effect of psychopathic Meanness is less clear-cut. Whilst, there is evidence suggesting that the Meanness-affiliated trait of callousness predicts general offending behaviour (e.g., Kahn, Byrd, & Pardini, 2013), our focus on media piracy seems to be more affected by peer influence and, therefore, sensitivity to social impression management.

We are not the first to consider the role of psychopathy in typical deviance behaviours like microcrimes. There have been a variety of studies using the Crime and Analogous Behaviour scale (Miller & Lynam, 2003), which includes lower-level problematic behaviour, like alcohol use and risky sexual behaviour, lower-level illegal behaviour, like personal substance abuse and more serious illegal behaviour such as assault, theft and intention to harm others. In general, psychopathic traits have some utility in predicting more criminal and similar behaviour in a variety of studies (recent examples include: Dinkins & Jones, 2018; Miller, Hyatt, Maples-Keller, Carter, & Lynam, 2017;

Miller, Lamkin, Maples-Keller, Sleep, & Lynam, 2018; Seigfried-Spellar, Villacís-Vukadinović, & Lynam, 2017).

More specifically, in the triarchic conceptualisation of psychopathy, there is research that has studied the effectiveness of these traits in predicting responses to the Normative Deviance Scale (Coffey et al., 2018). Coffey et al. used Psychopathic Personality Inventory-Revised (PPI-R)-derived triarchic traits and showed: (*i*) Boldness predicted general deviance, drug use, assault, school misconduct; (*ii*) Disinhibition predicted general deviance, theft, vandalism, school misconduct and violent deviance; and (*iii*) Meanness only negatively predicted school misconduct. These authors further tested interactions between the PPI-R-derived triarchic traits for predicting deviance behaviour, finding no models of statistical significance. Part of our data collection in the current study will allow us to use a similar sample size to Coffey et al. to conceptually replicate the relationship between the triarchic traits (using a different measure) and normative deviance. The relationship between triarchic traits, normative deviance and microcrimes will be of interest for explaining individual differences in the YouGov survey.

As a tradition, models of psychopathy originate from trying to understand antisocial behaviour, antisocial personality disorder and behavioural problems (see Hervé, 2017). As such, many instruments to assess psychopathic impulsivity and psychopathic fearlessness are implicitly (and often explicitly) oriented towards assessing criminal or antisocial proclivity. Media piracy behaviours can be considered separate from typical rule breaking or can even be seen as a positive behaviour as Yu's (2012) interviews with college students show: “personally I think it’s harmless” (p. 367) and “no, I wouldn’t say they [media pirates] are criminals. It’s not that big a deal. I know it’s not legal, but . . . you know . . . it doesn’t feel the same” (p. 368). With this in mind, the self-reports of psychopathic Disinhibition that implicitly or explicitly refer to criminal behaviour (such as the TriPM; Patrick, 2010) may not be effective predictors of microcriminality. Therefore, we consider the utility of a personality measurement that encompasses impulsivity, fearlessness and lack of anxiety, but without the moral loading of psychopathic trait questionnaires: the Reinforcement Sensitivity Theory (RST; see Corr, 2004; Corr & Cooper, 2016). We additionally include a qualitative response for all

participants to build on the work by Yu (2012). This will involve ask participants providing a rationale for engaging with (or not engaging with) media piracy. This will add a large sample, detailed self-report to the literature on engaging with media piracy.

RST is a neurologically driven approach to understanding differences between individuals. Variations in neural structures and neuroendocrinology lead to different behavioural expressions of seeking rewards in the environment (the Behavioural Approach System, BAS), avoiding potentially punitive stimulus (the Fight/Flight/Freeze System, FFFS) and inhibited-ruminative behaviour to respond to ambiguous stimuli (the Behavioural Inhibition System, BIS). This framework allows for measurement of impulsivity (in Impulsive-BAS+), non-planfulness (in Persistence-BAS-), fearlessness (in FFFS-) and lack of anxiety (in BIS-). Previous studies have shown that the expected correlations between psychopathic traits and RST traits do exist using older (Hughes et al., 2012; Sellbom & Phillips, 2013) and contemporary (Satchell et al., 2018) questionnaire measures of RST. In the expanded data collection in the second study of this paper, RST traits are used to investigate disposition pertinent to piracy behaviours without the criminality-related phrasing of the psychopathic traits measure.

We have additionally included a measure of the Five-Factor Model of personality, the NEO-IPIP-60 (Maples-Keller et al., 2019). This is due to recent research finding that the triarchic model of psychopathy is in line with Five-Factor tools (Hyatt et al., 2018). Our hypotheses about the Boldness domain behaviours of low self-control and low anxiety predicting media piracy (based on the aforementioned work by Brown & Krause, 2017; Brown & MacDonald, 2014; Gunter et al., 2010; Zhang et al., 2009) can be additionally measured using Five-Factor model extraversion and neuroticism. The inclusion of Five-Factor model traits allows our use of the triarchic psychopathy model to converge with other research that uses a Five-Factor model approach to psychopathy. Additionally, the inclusion of both the triarchic psychopathy and Five-Factor model for predicting media piracy allows our findings to contribute to ongoing discussions of the utility of these two approaches (see Collison et al., 2019)

Here we present two studies, one on a UK sample and a follow-up replication-extension in a US sample. Both studies have the same principal predictions with additional expansions being afforded in Study Two where the data collection sessions can last longer. Table 1 reports the literature-derived hypotheses and exploratory analyses in the current study. Overall, due to the potential pro-social rationalisations of engagement with microcrimes and media piracy, we do not expect that psychopathic Meanness will be related to these behaviours, but Boldness and Disinhibition will (Hypotheses 1 and 3). We will attempt to conceptually replicate Coffey et al., (2018) in hypothesis 2. Hypotheses 4 to 7 will test for convergence between the psychopathic trait findings and other similar domains of personality from Reinforcement Sensitivity Theory and the Five-Factor model. As additional questions, we will also explore short answer responses to an open question about participants' reasons for engaging with media piracy (Question 8). If there are coherent emergent themes, the relationship between these themes and psychopathic traits will be evaluated in further exploratory quantitative analysis (Question 9). In the review of this registered report, it was requested that we include the relationship between household income and engagement with media piracy. Based on the overall convenience of engaging with media piracy in contemporary society, it is possible that there would be no relationship between personal finances and this behaviour. Alternatively, finances could motivate more engagement with media piracy as those with lower incomes may seek any opportunity to engage with media content. Due to these two plausible mechanisms, we have no clear predictions of any effects (Question 10).

Study One

Study One builds on the 'microcrime' work conducted by YouGov with an international population, which includes focus on illegal streaming and downloading. We extend their work by investigating the variance in microcrime engagement that can be explained by individuals' psychopathic personality traits.

Study One – Method

Sample

We set our minimum sample size by the assumption that the smallest effect size of interest would be an r = .20 correlation between any of the psychopathy traits and microcrime engagement. We chose this effect size as we lack a previous literature to inform our practice and any readily interpretable concrete variables (as is best practice Lakens, Scheel, & Isager, 2018). Instead we turn to the general size of effects in the psychological literature, where personality research generally finds r = .21 (Fraley & Marks, 2007), social and personality psychology finds r = .19 (Gignac & Szodorai, 2016) and Funder and Ozer (2019) refer to r = .20 as the typical effect size in research. Thus, setting our smallest effect size of interest to r = .20 allows us to estimate the effects of the current study to a degree comparable with general findings in the field. We set $\alpha = .05$ and $\beta = .05$ which led to a calculated required sample size of at least $N = 319$ (using the R package 'pwr', Champely, 2018).

We had resources to collect data from $N = 350$ using the prolific.co participant recruitment service, where participants are paid £2.50 for their participation (equivalent to £5 per hour). This sample size is sufficient to detect the desired pairwise correlation, as well as a minimum overall effect of $R^2 = .05$ in a regression where we use triarchic Boldness, Meanness, Disinhibition (df = 3) to predict microcrime engagement, assuming at the lowest $\alpha = .05$ and $\beta = .05$ (using 'pwr' and converting from $f^2 = .05$).

Incomplete responses were not retained for analysis so additional resources were used to make sure we met our target sample of 350 participants. Raw data from a total of N= 371 participants were collected, and this left a sample of N = 351 (M_{Age} = 30.11, SD_{Age} = 9.66, n_{Female} = 181, n_{Male} = 170, $n_{UKCitizen}$ =82, $n_{USCitizen}$ = 11, $n_{OtherCitizen}$ = 258) that passed our attention checks. Participants were also asked to report their annual personal income with the instruction: "Please report your annual personal income to the nearest £1000. For £1000, the response would be '1', £20,000, the response would be '20'". These data had some extreme outliers, e.g. participants reporting numbers 5, 000 or 2,000 meaning 5,000,000 and 2,000,000 by the way the question was asked. It was decided that it was likely that the 19 participants reporting millions of pounds a year in income had made a reporting error. These data were cleaned to remove responses above £1,000,000 a year in income, leaving $M_{£KIncome}$ = 16.80, $SD_{£KIncome}$ = 30.97.

Exclusion criteria. Participants were excluded if they failed any of four attention check items in the psychometric measures ("please select 'true'"), if they completed the study in an unfeasible time of under five minutes or if they provided invariant responses (SD= 0) across the items of the psychometric measures. To further ensure data quality, we asked participants for their age, gender and nationality at the beginning and end of the study and excluded any participants whose data did not match these two checks.

Measures

Microcrime measure. We used the same measure deployed by the YouGov survey team (YouGov, 2016) with minor edits. First, we combined the two media piracy questions of streaming or downloading into a single item. Additionally, we combined the questions about lying about one's own age and one's child's age to gain a discount. Had these questions remained separate, we could, by proxy, be assessing the extent to which triarchic traits predict parenthood as non-parents would always score lower. Our combined question avoids this confound. By the same rationale, the item referring to 'paying' someone cash-in-hand to avoid tax is a measure of one's experience hiring others. By clarifying this item to include receipt of tax-avoidant payment, we will maintain the microcrime element but without over-scoring those who could employ others. The final list of microcrimes were eight activities that are technically illegal in the UK system but are 'lower level' crimes that are frequently committed. The complete list of activities can be found in Table 2. The focus of this study is principally on the illegal streaming and downloading of TV shows, movies or music. In keeping with the YouGov methodology, participants reported on their frequency of engagement with the activity from "*I have never done this*" (which we coded as 0), "*I have done this once or twice*" (1), "I occasionally do this" (2) and "*I frequently do this*" (3). Participants can also report "*Don't know/prefer not to say*" which we code as a non-response.

We tested consistency in participants' engagement with microcrimes with McDonald's Omega (using 'jmv'; Selker, Love, & Dropmann, 2019). We also expected (and registered in our analysis plan) that our data would be skewed towards never (0) having engaged with microcrimes and we recoded our data to have a total count of the number of microcrimes an individual had engaged

with at least to the "*I have done this once or twice*" (1) level as a measure of Microcriminality. We note that this is the same methodology as the original survey. The item-level contributions to this measure can be found in Table 2, which includes the skew of the individual items, which were, on average, skewed in the predicted direction (M_{Skew}= 1.31). For analysis, the Microcriminality total count and the binary response to the media piracy question will be retained.

Triarchic Psychopathic personality measure (TriPM). To assess the psychopathic personality traits of our sample we used the TriPM (Patrick, 2010). This 58-item measure asks participants to consider if a series of statements are "*True*" (coded as 3), "*Somewhat true*" (2), "*Somewhat false"* (1) or "*False*" (0) descriptions of their own views. The TriPM provides scores on Boldness (19-items), Disinhibition (20-items) and Meanness (19-items). We tested the internal consistency of responses to each domain using McDonald's Omega (see Table 3).

Normative Deviance Scale (NDS). The NDS (Vazsonyi et al., 2001) is a 55-item measure of engagement with a variety of activities that are illegal, antisocial or associated with problematic life behaviours. This scale was originally designed to be answered by adolescents but the question structure of "have you ever…?" allows anyone to provide a retrospective report. This scale includes items similar to those deployed in the YouGov Microcrime survey, such as "Have you ever avoided paying for something (e.g., movies, bus or subway rides, food, etc.)?" This scale is responded to on a scale of "*Never"* (coded as 0), "*One time*" (1), "*Two to three times*" (2), "*Four to six times*" (3) or "*More than six times*" (4). The measure has subsections for Vandalism (8-items), underage Alcohol use (7-items), Drug use (9-items), School misconduct (7-items), Theft (7-items), Assault (6-items) and General Deviance (11-items). We will test the internal reliability of these measures using McDonald's Omega (see Table 3).

Reasons for engagement with media piracy (or not). Next, we asked that participants report their reasons for engaging with media piracy or not. Media piracy is chosen as a focus for consistency with the second study. To put the qualitative open response in context, participants will be first asked to declare a yes or no response to the question "have you ever engaged in media piracy (illegally streaming/downloading TV shows, movies or music)?". Following that question,

participants who selected 'yes' to the previous question will be asked to respond to the open question "Please could you detail (in two or three sentences) your reasons for engaging with media piracy" and those who selected 'no' will be asked "Please could you detail (in two or three sentences) your reasons for not engaging with media piracy".

Procedure

Participants completed the study online, using the survey platform Qualtrics. After providing informed consent, they were asked for information on their age, gender and nationality ('UK citizen' or 'Other'). We additionally asked participants to report their annual personal income to the nearest £1000. Then they completed the TriPM, followed by the Microcrime measure and the NSD. Finally, participants were asked to provide a written response to one of two statements. For those who report some engagement with media piracy, they were asked to "please describe your personal reasons for engaging in media piracy" and for those who report no experience: "please describe your personal reasons for not engaging in media piracy". Participants were thanked for their time and provided with debriefing information.

Analysis

Quantitative analyses. All analysis were conducted on the statistical software R (R Core Team, 2013) and our code was submitted for review alongside our registered report (code can be found here: https://osf.io/g74ey/). Outlier values in the data set were removed by having a standardised score of $Z > 3.00$ on trait variables or standardised Cook's distance of $Z > 3.00$ for the models testing hypotheses.

Linear models using base R were built where the three psychopathic personality traits were used to predict: (a) the number of microcrimes reported by participants; and separately; and (b) self-reported engagement with digital media piracy. Our models were additionally be summarised using Dominance Analysis (using 'yhat', Nimon, Oswald, & Roberts, 2013). Dominance Analysis demonstrates which of the predictors in complex models are most effective across a range of criteria, more than standardised weightings alone (for an overview see Nimon & Oswald, 2013) and has recently been used to analyse how subclinical personality traits can explain variance in externalising

behaviour by Vize et al. (2019). We drew inference from the percentage of variance explained by the general dominance factor.

Overall inference of significance was drawn from significance defined at a conservative $\alpha = .001$ due a high number of tests conducted. Whilst our study was powered to detect individual significance levels of $\alpha = .05$, we were cautious about the rate false positive discovery with multiple tests by chance and drew inference from this conservative criterion.

Study One – Results

Media piracy prevalence

Engagement with microcrime was common in the sample overall. At least 24% of participants report engaging with at least one form of microcrime at one point in their lives (see Table 2). For the particular focus on piracy, 83% of our participants report having engaged with illegal streaming or downloading of media content at one point in their lives

Predicting piracy

Our primary hypothesis was that psychopathic Boldness and Disinhibition would positively predict media piracy engagement. Table 3 reports the descriptive statistics for the psychopathic personality traits in Study One. The bivariate correlations and the model built using the three psychopathic traits to predict media piracy engagement is presented in Table 4. In the correlations the only significant effect was a weak positive relationship between Disinhibition and piracy engagement. The linear model explained 5% of the variance in engagement with media piracy, with only Disinhibition being a significant positive predictor (explaining 3% of the variance itself). Overall, our hypothesis was partially supported. We were incorrect to predict that Boldness would play a role in media piracy engagement, but Disinhibition was an important factor. Meanness, for media piracy, was not an important trait in our data.

Predicting normative deviance

Our second hypothesis was that the psychopathic traits will predict normative deviance. The results of correlations and linear models predicting the normative deviance facets can be found in Table 4. Of the observed correlations, the pattern of effects was that Boldness was generally not

correlated with NDS domains, Meanness had consistent small-moderate positive correlations with NDs domains and Disinhibition showed moderate-strong positive correlations with the NDS domains. In line with Coffey et al. (2018) we found evidence that trait Disinhibition was broadly important for positively predicting all facets of the NDS in our linear models. Interestingly, unlike Coffey et al., we found that Boldness was a poor predictor of all NDS subdomains except drug behaviour. Unlike Coffey et al., Meanness was found to be a noteworthy positive predictor of many of the NDS facets, in particular the domains with more interpersonal contact, and did not predict the drug or alcohol facets. Overall, our findings partially support the work of Coffey et al., but with our key findings were the broad importance of Disinhibition and Meanness.

Predicting microcrime

The model built predicting the total number of microcrimes that the participants had ever engaged in is presented in Table 4. Bivariate correlations between microcrime totals and the TriPM traits demonstrate moderate significant positive effects between Disinhibition and Meanness with microcrime engagement. No significant effect was observed for Boldness. In linear models, we found that general microcrime engagement predicted using the psychopathic traits explained 13% of the variance, with the significant positive predictors being Disinhibition and Meanness, with Meanness having the largest general dominance values. This is in line with the NDS findings above.

Study One – Summary Discussion

The results of study one suggested particular importance of trait Disinhibition for media piracy, normative deviance, and microcrime in general. Trait Meanness was also important for understanding deviance with more interpersonal harm risk and general microcrimes. Boldness appeared less important for predicting microcrime and normative deviance in these data, with the exception of drug use in the NDS. These findings provide mixed support for our hypotheses, so our second sample registered replication investigates the robustness of these effects in a different sample.

Study Two

In an attempted internal replication of our Study One results, we will collect data from a second sample of participants, this time in the US who will be taking part in a larger study. Here, we

will extract key variables to replicate the effects of Study One with the additional measures of the RST model of personality. The hypotheses and methodology of this replication study were submitted alongside Study One, before any data collection had started.

Study Two – Method

Sample

The same sample size defining heuristics as Study One will be used here, with a target sample size of N= 350. The same exclusion criteria and attention checks as in Study One (see above) will be applied here.

This sample consisted of US college students. The collection of these data set was disrupted by the COIVD-19 pandemic. After cleaning our data, this left us with n = 183 participants being collected before a lockdown affected accessibility of participants and n = 138 participants completing the study before further data collection became unfeasible, leaving a Study Two sample of N = 321 for analysis. Whilst lower than our intention, this is still a sufficient N as per our power calculation. As it was not possible to collect further data from this population, we chose to use this sample as the complete second population (M_{Age} = 19.97, SD_{Age} = 3.03, n_{Female} = 171, n_{Male} = 149, $n_{USCitizen}$ = 295, $n_{OtherCitizen}$= 26). As was the case with Study One, the Study Two population were asked to report their annual income with the instruction "Please report your annual personal income to the nearest $1000. For $1000, the response would be '1', $20,000, the response would be '20'". Again, these data had some extreme outliers (e.g., "13000" which in the context of the question is $13 million) and again it was decided that it was likely that those reporting millions of dollars a year in income had made a reporting error. The data were cleaned to remove the 19 responses above $1,000,000 a year in income, leaving $M_{\$KIncome}$= 7.16, $SD_{\$KIncome}$ = 13.88.

Measures

The measures in this study included the question about digital piracy from the YouGov microcrime survey, the qualitative open response questions about reasons for engaging with media piracy and the NDS. We chose to exclude the rest of the YouGov microcrime items from Study Two as they were tailored for a UK audience and did not readily translate to a US context. Again, we used

the TriPM to assess psychopathic traits. Additionally, we included a measure of the RST theory and Five Factor Model of personality. We also included tests of difference (d, and *p* derived from *t*) and similarity (the overlap coefficient) to demonstrate the any cultural differences between the UK and US sample.

Reinforcement Sensitivity Theory - Personality Questionnaire (RST-PQ). The RST-PQ (Corr & Cooper, 2016) is a 65-item scale measuring the key RST traits of BIS (23-items), FFFS (10-items) and BAS. BAS is subdivided into four domains. The 'Now' BAS traits of nonplanful approach in BAS-Impulsivity (8-items) and sensitivity to proximate reward in BAS-Reward Reactivity (10-items) and the more 'Future' BAS-oriented novelty attractiveness in BAS-Reward Interest (7-items) and long-term dedicated BAS-Goal-Drive Persistence (7-items). Participants complete the RST-PQ by answering how much they consider statements to describe them on a scale of "*not at all*" (coded as 0), "*slightly*" (1), "*moderately"* (2) and "*highly*" (3). We used the average response to items in the subscales for analysis (see Table 3).

Five Factor Model – IPIP-NEO-60. The IPIP-NEO-60 (Maples-Keller et al., 2019) assess the Five Factor Model of personality using 12-items per domain. It measures responses to Neuroticism (anxiety, depression, immoderation), Extraversion (friendliness, assertiveness, excitement seeking), Openness (artistic interests, emotionality, adventurousness), Agreeableness (trust, morality, altruism) and Conscientiousness (orderliness, achievement striving, self-discipline). Participants complete the measure by responding how accurately they consider a series of descriptions (I "worry about things") on a scale of "*very accurate"* (5), "*moderately accurate*" (4), "*neither accurate nor inaccurate*" (3), "*moderately inaccurate*" (2) to "*very inaccurate*" (1). Descriptive statistics and internal consistencies are reported in Table 3.

Procedure

After giving informed consent, participants completed the same Study One demographic information: their age, gender and nationality ('US citizen' or 'Other') and their annual personal income to the nearest $1,000. Then participants completed the TriPM then the NDS, the media piracy

item and then the qualitative behaviour explanation question. This was then followed by the Study Two measures of the RST-PQ and NEO-IPIP-60. They were thanked and debriefed for their time.

Analysis

The analytic strategy for study two was the same as for Study One. Additionally, we built models to demonstrate the utility of the RST-PQ and Five Factor Model traits at predicting the media piracy and NDS behaviours.

Study Two – Results

Lockdown effects and differences between samples

As half of the Study Two sample completed the study under different sociocultural conditions due to the coronavirus lockdown, we tested if lockdown had changed engagement with piracy behaviour. As people were spending more time at home and seeking media entertainment, it was possible that they might increase in the piracy behaviour. We found no evidence (d= 0.07, p = .539, overlap coefficient = .97) of a change in piracy behaviour between pre- ($N_{\text{Prelockdown}}$ = 183, $M_{\text{PrePiracy}}$ = 0.66, $SD_{\text{PrePiracy}}$ = 0.48) and post- the onset of lockdown ($N_{\text{Postlockdown}}$ = 138, $M_{\text{PostPiracy}}$ = 0.63, SD_{PrePost} = 0.49).

Further we checked to see if there were general differences in the traits, NDS scores, and piracy tendencies between the Study One and Study Two samples. Table 3 reports the descriptive statistics and difference tests between the samples. In all cases of piracy and normative deviance engagement, the Study One international sample scored higher than the Study Two US college student sample. There was no difference in trait Disinhibition between the samples, but the Study Two sample were significantly higher on psychopathic Boldness and Meanness.

Predicting piracy

Triarchic psychopathic personality traits. Reported in Table 5 are correlations and the linear model predicting media piracy engagement in the Study Two sample using the three psychopathic personality traits. In the bivariate correlations, only Disinhibition was a significant moderate positive correlate with media piracy. For the linear model, the trait predictors explained 8% of variance and it was particularly Disinhibition which was dominant in the model, explaining most of

the variance by itself. Boldness and Meanness were not significant or notable predictors. Again, this is a partial support of our first hypothesis.

Reinforcement Sensitivity Theory. It was low FFFS that was particularly important in the models using the RST traits to predict media piracy (see Table 6), being a significant predictor and having the strongest general dominance weight. BAS-Impulsivity and BIS had similar general dominance values to FFFS, suggesting that high impulsivity and anxiousness are related to more piracy engagement, but it should be noted that these did not meet our conservative statistical significance criteria of .001 in the models. Overall, the results highlight low fear specifically alongside similar impulsivity findings from the TriPM. This is a partial support of our fourth hypothesis where we predicted that BAS-Impulsivity and BAS-Reward Reactivity would be important in this model. The pairwise correlations between the RST-PQ traits and media piracy are reported in the supplemental table 5. In general, these bivariate correlations were weak (all $r \leq |.19|$) and like in the linear models, the lower FFFS (r= -.16, p= .006) and high BAS-Impulsivity (r= .16, p= .007) were somewhat related to media piracy engagement, although not to our corrected alpha criterion of .001. However, BAS Goal-Drive Persistence (r= -.19, p< .001) was a significant negative predictor of media piracy in the correlations.

Five-Factor Model. Pairwise correlations demonstrated that Conscientiousness was a moderate negative correlate of media piracy (r= -.30, p< .001) and Openness a small-moderator positive correlate (r= .20, p< .001). Neuroticism was a weaker correlate, not significant by our conservative criterion (r= .18, p= .002) and there was no notable correlation between piracy and Agreeableness (r=-.02, p= .705) or Extraversion (r= -.09, p= .106). Consistent with the findings for TriPM Disinhibition, low Conscientiousness was the most dominant predictor in linear models using the Five-Factor Model traits to predict media piracy engagement (see Table 7). Interestingly, higher Openness was also a noteworthy predictor of increased media piracy, suggesting that those with artistic interests are more likely to illegally seek content in this way. This replicates, and adds new dimensions to, the general theme of impulsive traits in these data. This partially supports our sixth

hypothesis that low Conscientiousness, low Neuroticism and high Extraversion would be important for media piracy. Neuroticism and Extraversion were much less relevant than we had predicted.

Predicting normative deviance

Psychopathic personality traits. The results for the TriPM models predicting NDS domains and pairwise correlations can be found in Table 5. In this sample, the most consistent effect was higher Disinhibition and Boldness predicting higher engagement across the NDS domains, much like Coffey et al. (2018). Boldness was less relevant for property-related NDS (vandalism and theft) and school deviance and Meanness did not notably feature in any of the models. These results generally support our second hypothesis, which was that we would replicate Coffey et al.'s findings. Our results here are highly consistent with their work.

Reinforcement Sensitivity Theory. The results for RST traits predicting normative deviance are highly consistent across domains (see Table 6). With the exception of the theft subdomain, BAS-Impulsivity positively predicted NDS responses across domains. FFFS was also noteworthy in the models predicting alcohol, drug, and general deviance. This adds to the overall theme of impulsivity and fearless traits being related to normative deviant behaviour. This partially supports our fifth hypothesis which predicted that BAS-Impulsivity and Reward Reactivity would predict normative deviance. Once again, Reward Reactivity was much less relevant in these models than our prediction. Bivariate correlations between the RST-PQ and the NDS scales are reported in the supplemental table 3 and the correlations are consistent with the linear model, with most correlations being the small-moderate positive effect of BAS-Impulsivity on all NDS domains, with weaker to negligible effects of the other traits.

Five-Factor Model. Table 7 reports the models using the Five-factor traits for predicting the NDS subdomains. For Alcohol and General deviance, it was low Conscientiousness and high Openness and Extraversion that were related to increased NDS scores. Similarly, low Conscientiousness and high Openness were the most dominant predictors in models predicting Drug and School deviance. For Theft, Vandalism and Assault, the Five-factor models were weaker at predicting NDS outcomes, with Agreeableness being a significant negative predictor of Assault

deviance and Openness positively predicting Theft. Overall, the most relevant traits for understanding NDS scores were low Conscientiousness and high Openness and Extraversion. This is consistent with the RST and TriPM findings above. This partially supports our seventh hypothesis. We did not anticipate the importance of Openness in these models, but we did hypothesize that low Conscientiousness would be important for NDS facets. Again, our prediction that high Extraversion and low Neuroticism would also be important was incorrect.

Supplemental table 4 reports on the pairwise correlations between the Five-factor model traits and the NDS subdomains, showing the same effects as the model, with only Conscientiousness moderate-weakly negatively and Openness weakly positively correlating with a range of NDS outcomes.

Study Two – Summary Discussion

Extending results from Study 1, the second sample, which included US-based undergraduate students. In this second sample, we replicated the effects of the first in terms of Disinhibition being important for engaging with media piracy. This was supplemented with measures of the Five-Factor Model, and to an extent, RST also finding that impulsivity was important. In the Five-factor models, Openness was also important for understanding media piracy.

The findings of the models predicting the NDS were similar to Study One in terms of the importance of Disinhibition, but unlike Study One, Meanness was much less relevant and Boldness more relevant to predicting normative Deviance.

Additional Registered Exploratory Analyses: Studies 1 and 2

Predicting themes for (not) engaging with piracy

Content Analysis. We also collected open responses to the choice to engage with media piracy or not. These responses were analysed with a form of Content Analysis. This method was chosen to efficiently summarise the responses from our large sample of participants. Further, Content Analysis can also be used to create categorical classifications for use in exploratory post-hoc quantitative analysis to demonstrate any potential relationship between self-reported narrative and personality measure scores.

To create the content analysis framework, an initial coder read the reasons for engagement (or not) explanations from all participants. They evaluated the responses from those who engage with piracy and those who do not separately. Then they identified repeated themes across the sample. They used these themes to create a coding scheme where an explanation for engagement was classified as present (1) or absent (0) in each respondent's reply. This coding strategy meant that each open response could have multiple themes present in one statement. A team of three naive coders evaluated a random 10% sample of the first coder's theme classification. If there were divergent views in classification tendency (which we set as less than 90% agreement) then the coding was conducted again. We had no a priori predictions of what themes would emerge from our sample as there is limited contemporary research on justifications for media piracy.

The respondent-level classification of themes allowed for exploratory quantitative analysis of the relationship between the themes and the psychopathic personality traits.

Coding and inter-coder consistency. Content analysis was conducted on both samples at the same time, as the analysis of the traits predicting particular themes will be conducted on the subset of the participants who have (N = 484) or have not (N = 170) engaged in piracy. Only participants who passed the attention checks and data cleaning had their statements coded. The initial coder identified seven themes in explaining why a person did engage with piracy and five themes for those who did not. This coding scheme was considered complete by the three coders who later used the scheme, and they did not identify any redundant or additional themes. Our coding guidance, examples of the themes, and the complete open responses can be found on the OSF here (https://osf.io/g74ey/).

The most common themes for engaging with piracy included issues of 'Accessibility', where media content was not available through legal means due to geographic restrictions or the content being older; 'Price', where media piracy is referred to as free or legal access to media content is described as outside the participant's affordability; and 'Convenience', where media piracy was explicitly described as easy to do or easier than legal means. Less common were descriptions of 'Social Norms', where participants describe how their immediate and general peer group engage with piracy; using media piracy as a 'Trial', where piracy was used to sample work and content of interest

was later or bought or merchandise was purchased from the content creators; 'No Punishment', where participants consider piracy to be of low risk or that they will not get caught; and media piracy being 'Morally Acceptable', where participants report that they do not feel guilty about media piracy as they only pirate from big companies who make enough money that participants consider the piracy negligible.

Reasons for not engaging with piracy were fewer and more concentrated on themes such as piracy is 'Illegal', where participants stated their reason for not engaging was because it was against the law; they had other 'Options', where participants would state that they had the resource to use legal means so there was no reason to use piracy; 'Piracy is Unfair/Amoral', where participants stated how their concern for the content creators is the main reason they do not engage; 'Computer Safety' Issues, where participants report concerns about malware and viruses associated with illegal downloads; and 'Lack of Technical Knowledge', where participants mainly reported a lack of capability ("I wouldn't know how to do it").

After the first coder identified the themes and produced a coding document, three new coders, unaware of the other measures in the project, coded the statements on the themes. They were also told to identify any additional themes not identified, but they did not find any. There were 675 codable responses in the two studies together (excluding participants cleaned out of the data, non-English responses, or blank responses). For analysis on the relationship between the traits and the outcomes, it was decided that at least 50 participants in the whole data needed to express this theme. An initial check of the modal coding of the presence of the themes in each participants' answers suggested the following themes were too rarely present for analysis; Social Norms (with n = 37 responses referencing this theme), Trial (n = 11), No Punishment (n = 11), Morally Acceptable (n = 32), Computer Safety (n = 15), Piracy is Amoral (n = 37), Lack of Knowledge (n = 16) and Options (n = 46). This left four main themes for analysis. Inter-rater agreement using Kuder-Richardson-21 was acceptably high for Price (KR21= .93, n = 272) and piracy is Illegal (KR21= .95, n = 91) and the modal coding was retained for analysis. The coding for Accessibility (KR21= .86) and Convenience (KR21= .88) did not meet our 90% agreement standard. For these two coding themes, the coders were

re-approached for these domains and a majority of coders with the first author discussed the codes to come to a consensus, now recorded in the modal coding. This meant that the Accessibility theme was present in 144 of the reasons for engaging in piracy statements, and Convenience in 83.

Predicting themes. The purpose of the content analysis coding for the presence or absence of themes was to investigate if particular psychopathic traits predicted increased mention of particular themes. We built exploratory binomial generalized linear mixed models which predicted the presence of the four themes using the three TriPM traits with random effects of study in a combined sample of those who have engaged in piracy (*N*= 484) or those who have not (*N*= 170). In all cases the variance of the random effect of study was = 0.00, suggesting the effects were consistent across data collections. For general dominance calculation, we built standard linear models predicting the presence of coding using the traits.

In the sample who had engaged with piracy, there was no strong evidence that our common codings were predicted by the psychopathic traits. For those participants who suggested they engaged with media piracy for reasons of Accessibility, that the content was geographically restricted or older and not able to access through legal means, the overall model explained 1% (marginal R^2 = .01) of the variance, with Boldness (β = -0.04, *p* = .248, *GD* = .00), Meanness (β = -0.04, *p* = .525, *GD* = .00), and Disinhibition (β = -0.06, *p* = .332, *GD* = .00) not meaningfully explaining predicting the presence of the theme. The same was found for the presence of Convenience themes, with an overall model marginal R^2= .01 and with Boldness (β = 0.24, *p* = .280, *GD*= .00), Meanness (β = 0.05, *p* = .884, *GD* = .00), and Disinhibition (β = 0.39, *p* = .244, *GD* = .00) not meaningfully explaining variance.

The model using the TriPM traits to predict references to the Price of content as a reason for engaging with piracy also explained relatively little variance (marginal R^2 = .02), with weak evidence that those higher on Disinhibition might be more likely to report this justification (β = 0.57, *p* = .026, *GD*= .01). Boldness (β = -0.17, *p* = .292, *GD*= .00) and Meanness (β = -0.05, *p* = .853, *GD*= .00) were not meaningful predictors. The only present effect here was small and we do not consider it noteworthy. However, given the importance of Disinhibition and Impulsivity throughout these results, perhaps this effect is worth further dedicated investigation.

For the sample who did not engage with piracy, we investigated whether the common theme of 'Piracy is Illegal' differed based on sample psychopathic traits. This model had a marginal R^2 = .02, but no one trait was a meaningful predictor, with Boldness (β = 0.39, *p* = .179, *GD* = .01), Meanness (β = 0.02, *p* = .962, *GD* = .00), and Disinhibition (β = -0.23, *p* = .693, *GD* = .00) all being negligible effects, with Boldness being the most dominant.

Income and piracy

We did not observe a relationship between self-reported annual income and engagement in piracy in study one (β = -0.00, *p* = .354) or study two (β = 0.00, *p* = .250). We additionally tested to see if an individual's self-reported annual income would relate to mentions of the Price theme in the open responses (with a random effect of study), finding no effect (β = -0.00, *p* = .442)

Results-Seen Review Requested Analyses

During the stage two review process, where peer reviewers could see the results of this study, the following additional analyses were requested.

Revisiting the Triarchic Psychopathy Measure

Additional analyses were requested where six items in the TriPM which referred to illegal activity (i.e. "I have stolen something out of a vehicle.") were removed and the analysis conducted again. As many of these items fall in the Disinhibition facet, it could be the case that TriPM Disinhibition measurement was oversampling acquisitive crime tendencies and thus predicted piracy. We conducted the same dominance analysis models of the three TriPM traits predicting media piracy as before, finding, in Study One, weaker but consistent effects of Disinhibition (β_z= .13, *p*= .034, *GD*= .02), and similar effects of Meanness (β_z= .12, *p*= .045, *GD*= .02) and Boldness (β_z= -.01, *p*= .925, *GD*= .00). In Study Two the same pattern was observed, with Disinhibition being a notable predictor of media piracy even with the theft items removed (β_z= .24, *p*< .001, *GD*= .05) but not Meanness (β_z= .03, *p*= .596, *GD*= .00) or Boldness (β_z= .00, *p*= .980, *GD*= .00). Overall, this reanalysis of the TriPM

measure is consistent with the evidence from the Five-Factor Model Conscientiousness results and suggests the relevance of low inhibition for understanding media piracy.

Facets of Openness

In the discussion of the submitted draft of this paper, we had remarked that the finding that Openness predicted piracy was interesting and unexpected. We suggested it might be to do with the artistic elements of Openness. On sight of the results, a reviewer suggested analysing the sub-facets of Openness in the NEO-IPIP-60. This measure uses two items per sub facet of Openness (listed below). Consistent with previous analyses, we build a linear model using these six sub-facets to predict engagement with media piracy in Study Two and tested for effects with dominance analysis. In our model, it was not the facets of Artistic Interest (β_z= -.08, *p*= .235, *GD*= .00), Emotionality (β_z= -.04, *p*= .536, *GD*= .00), Adventurousness (β_z= .00, *p*= .954, *GD*= .00), or Intellect (β_z=.06, *p*= .314, *GD*= .01) that primarily explained piracy but, to a weak extent, Imagination (β_z= .15, *p*= .027, *GD*= .02) and primarily Liberalism (β_z= .25, *p*< .001, *GD*= .06) that predicted engagement with media piracy. That is participants who scored higher on "[I] tend to vote for liberal political candidates" and lower on "[I] believe in one true religion" were those who engaged more with media piracy. This suggests that it is political elements of Openness that relate to piracy, and a more extensive battery of political orientation may clarify these findings further.

General Discussion

The current research investigated the relationship between psychopathic personality traits and media piracy using two registered studies: a novel investigation and a replication. We supplemented this question with further other predictors from general personality models (RST, Five Factor Model) and other 'microcrime' and normative deviance (NDS) outcomes. We additionally explored participant reasons for why they have or have not engaged with piracy. The results from these projects come together to replicate and update findings in the existing literature on media piracy and normative deviance. Our findings provide mixed support for our hypotheses. Broadly, our hypothesis that the

impulsive facets across models would be important for predicting illegal behaviours was supported. There were other traits we hypothesised as relevant which were not (typically Boldness, Extraversion, Neuroticism, and Reward Reactivity) and traits which we did not predict would be strong model predictors that were (i.e., Openness).

We found a surprisingly high rate of piracy engagement in both studies, with the average participant having engaged with media piracy at least once, suggesting that this behaviour is widespread and perhaps more so than previous research has suggested (YouGov, 2016). The most consistent predictor of this behaviour between the two studies was Disinhibition and disinhibition-like traits. This included when the operationalisation of Disinhibition was with the full TriPM measures, the TriPM measure without criminal-behaviour items, and when measured through the Five-Factor Model or RST-PQ tools. This is much like previous work on music (Brown & Krause, 2017; Gunter et al., 2010; Higgins et al., 2006; Hinduja, 2012) and other forms of piracy (Donner et al., 2014), where it has been found that low self-control traits were important for piracy engagement. We did not assess exposure to informed peers directly in this study unlike previous work (Cheung, 2013; Malin & Fowers, 2009; Miranda & Kim, 2015; Tomczyk, 2019), but relatedly we did find not find that increased callous Meanness increased engagement with media piracy, suggesting no trait rationale for media piracy to be 'antisocial' in a proximate meaning. As methods of media piracy, and ways to engage with media, are continually evolving it is useful to observe the consistency of the literature findings here. Those looking to prevent media piracy of their content might look to procedural barriers with accessing content, which might lead to individuals seeking more convenient access.

The theme of convenient access to content was common in the open response explanations for piracy behaviour in our sample. The most common themes that participants raised when discussing media piracy was the price of accessing content legally and the lack of access to content outside of the geographic and time restrictions put on content. Whilst the price theme may be unsurprising, participants' reporting of difficulties with using different streaming and downloading services or the issues with regional and time lockouts on content suggests opportunities for intervention. These themes in the open responses were generally unrelated to the triarchic psychopathy traits, meaning

that we did not detect specific trait reasons for why individuals may form these explanations for engaging with piracy. The open responses here were often brief and lacked the depth of the work by Yu (2012), but we did find similar findings in the re-occurring themes in the data of lack of concern about being caught and highly prevalent endorsement of media piracy as a way to access content. Few participants mentioned concerns about being caught for their illegal behaviour, but those who did were explaining why they did not engage with piracy. Understanding the motivations why participants engage with piracy, more than why individuals do not, is important for enabling piracy prevention. We found distinct themes for why and why not our samples engaged in piracy and modelling intervention based on law-abiding behaviour alone may not prevent piracy behaviour. More mass surface-level open responses like ours and in-depth interview work like Yu's are important for understanding the reasoning behind piracy behaviour and offer insight to policing and prevention.

From a general psychopathic personality research perspective, it is noteworthy that Meanness was a poor predictor of illegal media piracy behaviour. Our findings were broadly a conceptual replication of Coffey et al.'s work, but in particular in our data it was Disinhibition that was the strongest predictor consistently. This would suggest that in this normative sample the callous facets of psychopathy had limited impacts on illegal activity. This is likely due to few of our microcrime and NDS outcome measures being directly interpersonal. There were few situations where direct personal harms are salient. Where those interpersonal costs were highlighted, for example in the NDS assault subdomain, there Meanness and Five-Factor model Agreeableness were stronger predictors. This is further evidence that these socially disruptive behaviours might not psychologically emerge from *antisocial* traits. This helps us understand how some illegal activities might be widespread, such as media piracy in this study, without there needing to be widespread strongly callous dispositions in society. Some microcrime behaviours occur quite frequently, and so moving beyond a focus on empathetic-social interests as a core component for law breaking would allow broader considerations of convenience and self-control in addressing illegal behaviour. This finding adds to the suggestion that broad suggestions of empathy deficits might not be sufficient to explain illegal activity. When systematically reviewing literature on Dissocial/Antisocial Personality Disorder and empathy,

Marsden, Glazebrook, Tlluy and Völlm (2019) found no evidence of empathy deficits, even when the individuals were also labelled with co-morbid psychopathy. Our findings highlight the importance of impulsive behaviours for socially disruptive outcomes and future work could expand specifically on the ways in which impulsivity and Meanness might relate for illegal activity outcomes.

All of our personality measures provided some insight into microcrime and normative deviance outcomes. Importantly, our chosen personality measures cover largely overlapping personality traits, focused around planfulness and anxiety. It is therefore no surprise that there were common findings across domains. This is in line with an understanding of personality traits within an integrative hierarchy (see Markon, 2009) and how different models might capture different lower-hierarchy subdomains. However, not all models capture the same features. Interestingly here, it was the Five Factor Model's Openness that was found to be notably related to engaging with media piracy. Supplemental exploratory analyses suggested that it was the two items from the liberalism facet of Openness that was responsible for these effects. Openness is not a trait commonly associated with illegal behaviours, so here it would seem that the Five Factor Model includes traits that should be used when studying media piracy. Future research could more explore the importance of liberalism in media piracy engagement with more robust tools of political interest. Further, the distinction between fear and anxiety that the RST approach offers was important here. Specifically, in the model using RST traits to predict media piracy, it was low FFFS but not BIS, that predicted piracy. Other the other models using traits that could be expected to capture fear, such as Boldness and Neuroticism, did not find such effects. Whilst all of these trait models overlap, and most frequently traits of impulsivity were important, it was useful to adopt a multiple measure approach. Future work on media piracy should consider the importance of FFFS and Openness and perhaps also similarly adopt a cross-model approach to measuring important individual differences.

Limitations and Future Directions

Our study was limited in treating media piracy as a broad construct. We asked only one critical question about media piracy, and it captured streaming and downloading of all forms of media. The participant open responses discussed music, film, television, video games, and a wide

variety of media formats. We also did not specify a narrow definition of media piracy specifically and future work could better explore the facets of what media piracy looks like. This is a dynamic and constantly changing behaviour and more is needed to understand this complex behaviour. Follow up research could refine the criteria of piracy to specifically television or films, where there is significant social motivation on behalf of the individuals to pirate and financial concern from companies losing revenue. Cross-disciplinary collaboration with cybercriminologists and cybersecurity experts would enhance this research going forward.

Our open response questions in this study were short and the framing of our question put to participants could be expanded for more depth of answers. We did not find strong evidence of traits predicting different reasons for engaging with media piracy, but the methodology itself is promising. Integrating content analysis in this way enhanced the type of data we collected and expanded the scope for interpretation. We identified key themes in participant responses which would not have been captured from response scales alone (for example, piracy to access older content as a re-occurring comment). Further research should expand on the potential for these pseudo-mixed methods which try and capture large sample open perspectives as a promising way to build on limited response-scale only methods.

Summary

This study investigated the relationship between psychopathic traits, general normative personality traits (Five Factor Model and Reinforcement Sensitivity Theory of personality) and engagement in an illegal, but highly prevalent, activity: media piracy. We found and replicated an effect of Disinhibition on engagement in media piracy and supported this with evidence of impulsive traits from other models (RST and Five-Factor Model) also predicting media piracy. We found similar patterns of traits when predicting microcriminality and normative deviance. Open narrative responses suggested that reasons for engaging with media piracy were related to the loss of access to content due to geographic restriction or content being older, the convenience of piracy sites, and most importantly the price of the streaming services content. Those who did not engage with piracy, primarily reported

not doing so because it is illegal. We did not find any trait predictors that explained variance in these different themes. Future research should consider the nuance of media piracy and continue to use open responses alongside response scale data to understand the growing issue of illegal consumption of media.

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Tables

Table 1. *The hypotheses and research questions for the current study*

Question	Sample	Tested by
Hypotheses		
1. Psychopathic Boldness and Disinhibition will positively predict media piracy engagement	Both Studies	Correlation, linear models, Dominance analysis
2. Psychopathic traits will positively predict Normative Deviant behaviour (a conceptual replication of Coffey et al., 2018)	Both Studies	Linear models, Dominance analysis
3. Psychopathic Boldness and Disinhibition will predict positively microcrime engagement	Study One	Linear models, Dominance analysis
4. Reinforcement Sensitivity Theory Impulsivity and Reward Reactivity traits will positively predict engagement with digital medial piracy.	Study Two	Linear models, Dominance analysis
5. Reinforcement Sensitivity Theory Impulsivity and Reward Reactivity traits will positively predict engagement with Normative Deviant behaviour	Study Two	Linear models, Dominance analysis
6. Five-Factor Model traits will positively (Extraversion) and negatively (Conscientiousness, Neuroticism) predict engagement with digital medial piracy	Study Two	Linear models, Dominance analysis
7. Five-Factor Model traits will positively (Extraversion) and negatively (Conscientiousness, Neuroticism) predict engagement with Normative Deviant behaviour	Study Two	Linear models, Dominance analysis
Additional exploratory analyses		
8. Content analysed responses to participant open answers, asking why they do (or do not) engage with media piracy.	Both Studies	Exploratory Content Analysis
9. The relationship between content analysis theme presence and psychopathic traits.	Both Studies	Linear models, Dominance analysis
10. The relationship between household income and engagement with media piracy	Both Studies	Linear models

Table 2. *The list of microcrimes measured in this study with descriptive statics and the percentage of participants reporting some engagement with that microcrime*

Microcrimes	Mean (SD)	% responses ≥1	Skew (s.e.)
Illegally streaming/downloading TV shows, movies or music	1.83 (1.10)	82.69	-0.46 (0.06)
Told someone your food order was take-away rather than eat-in because it costs less	0.40 (0.76)	25.64	1.82 (0.04)
Paid someone cash-in-hand or received payment cash-in-hand for work, so that it costs less / you receive more without paying tax	0.89 (0.93)	57.47	0.76 (0.05)
Lied about your own age / situation or your child's age /situation to get a cheaper deal on something	0.59 (0.77)	44.79	1.26 (0.04)
Refilled your drink without paying extra (where this is not permitted)	0.47 (0.83)	30.14	1.74 (0.04)
Put a product through a self-service till for less than it should actually cost	0.28 (0.62)	20.68	2.35 (0.03)
Eaten loose fruit/pick n' mix at a store without paying for it	0.30 (0.61)	23.52	2.33 (0.03)
Avoided paying for a fare on public transport	0.91 (0.88)	62.53	0.69 (0.05)

Table 3. *Descriptive statistics for the responses to the scales in Study One (international sample) and Study Two (US sample) and differences between the groups in Cohen's d (d), p values from t tests (p) and the Overlap coefficient (OVL)*

	Study One		Study Two		
Scale	M (SD)	ω	M (SD)	ω	Difference d (p) [OVL]
Media Piracy (3= I frequently do this and 0= I have never done this)					
Piracy engagement	1.83 (1.10)		1.06 (0.96)		0.74 (<.001) [.71]
TriPM (3= True and 0=False)					
Boldness	1.88 (0.50)	.85	2.65 (0.46)	.79	-1.61 (<.001) [.42]
Disinhibition	0.99 (0.39)	.81	1.05 (0.39)	.83	-0.14 (=.067) [.94]
Meanness	0.99 (0.41)	.86	1.21 (0.38)	.85	-0.58 (<.001) [.78]
NDS (4= More than six times and 0= Never)					
Vandalism	0.27 (0.41)	.75	0.15 (0.32)	.77	0.33 (<.001) [.83]
Alcohol	1.92 (1.16)	.82	1.25 (1.24)	.88	0.55 (<.001) [.78]
Drug	0.91 (0.66)	.85	0.66 (0.90)	.89	0.28 (<.001) [.89]
School	1.16 (0.82)	.75	0.77 (0.72)	.75	0.51 (<.001) [.79]
Theft	0.28 (0.46)	.77	0.17 (0.37)	.77	0.26 (=.001) [.86]
Assault	0.27 (0.42)	.74	0.18 (0.34)	.55	0.23 (=.003) [.86]
General	0.58 (0.48)	.70	0.34 (0.43)	.71	0.53 (<.001) [.79]
RSTPQ (3= Highly and 0= Not at all)					
BAS-Goal-Drive Persistence			2.25 (0.62)	.87	
BAS-Reward Interest			1.77 (0.66)	.83	
BAS-Reward Reactivity			1.84 (0.54)	.81	
BAS-Impulsivity			1.41 (0.59)	.76	
BIS			1.68 (0.66)	.94	
FFFS			1.54 (0.62)	.79	
IPIP-NEO-60 (5= Very accurate and 1= Very inaccurate					
Conscientiousness			3.34 (0.57)	.81	
Agreeableness			3.41 (0.49)	.74	
Neuroticism			2.63 (0.75)	.84	
Openness			3.02 (0.55)	.71	
Extraversion			3.50 (0.67)	.85	

Table 4. *The relationship between the triarchic psychopathy traits and microcrime and NDS measures in zero-order collections, multiple linear models, and dominance analysis in the Study One sample.*

		Boldness			Disinhibition			Meanness		
Outcome Measure	Model R^2	r_{zo}	β_z	GD	r_{zo}	β_z	GD	r_{zo}	β_z	GD
Microcrime measures										
Microcrime Total	.13*	.12	.08	.01	.27*	.20*	.05	.31*	.21*	.07
Piracy	.05*	.02	.01	.00	.19*	.16	.03	.11	.16	.02
NDS measures										
Vandalism	.15*	.12	.10	.01	.32*	.26*	.08	.31*	.19	.06
Alcohol	.08*	.14	.18	.02	.22*	.25*	.05	.10	-.04	.00
Drug	.13*	.22*	.27*	.06	.26*	.31*	.07	.12	-.06	.01
School	.18*	-.03	-.01	.00	.42*	.39*	.15	.22*	.08	.03
General	.12*	.14	.14	.02	.28*	.25*	.07	.24*	.11	.03
Theft	.17*	.13	.15	.02	.38*	.37*	.13	.24*	.06	.03
Assault	.11*	.01	-.02	.00	.28*	.21*	.06	.27*	.20*	.05

*denotes significance at our conservative alpha value of $p < .001$
Model R^2 and standardised beta values (β_z) are tested for significance in the linear model.
The zero order (r_{zo}) correlations are tested for significance independently.
General Dominance (GD) is computed using the yhat package

Table 5. *The relationship between the triarchic psychopathy traits and media piracy and NDS measures in zero-order collections, multiple linear models, and dominance analysis in the Study Two sample.*

		Boldness			Disinhibition			Meanness		
Outcome Measure	Model R^2	r_{zo}	β_z	GD	r_{zo}	β_z	GD	r_{zo}	β_z	GD
Media Piracy										
Piracy	.08*	-.07	-.01	.00	.28*	.27*	.07	.09	.02	.00
NDS measures										
Vandalism	.12*	.07	.12	.01	.29*	.29*	.08	.22*	.11	.03
Alcohol	.16*	.10	.22*	.03	.35*	.42*	.15	.09	-.07	.00
Drug	.20*	.15	.26*	.04	.37*	.44*	.15	.15	-.02	.01
School	.24*	.02	.14	.01	.47*	.51*	.22	.16	-.01	.01
General	.20*	.18	.29*	.05	.35*	.43*	.13	.14	-.03	.01
Theft	.15*	.05	.16	.01	.35*	.41*	.13	.06	-.09	.00
Assault	.10*	.18	.22*	.04	.19*	.22*	.04	.18	.08	.02

*denotes significance at our conservative alpha value of $p < .001$
Model R^2 and standardised beta values (β_z) are tested for significance in the linear model.
The zero order (r_{zo}) correlations are tested for significance independently.
General Dominance (GD) is computed using the yhat package

Table 6. *The relationship between the Reinforcement Sensitivity theory traits and media piracy and NDS measures multiple linear models and dominance analysis in the Study Two sample.*

		BAS-GDP		BAS-Imp		BAS-RI		BAS-RR		BIS		FFFS	
Outcome Measure	R^2	β_z	GD	β_z	GD	β_z	GD	β_z	GD	β_z	GD	β_z	GD
Media Piracy													
Piracy	.13	-.09	.02	.20	.03	-.12	.01	.05	.00	.18	.03	-.29*	.04
NDS measures													
Vandalism	.11	-.13	.02	.28*	.06	-.04	.00	.13	.02	.00	.00	-.17	.01
Alcohol	.16	.01	.00	.33*	.08	-.06	.00	.05	.01	.17	.03	-.30*	.03
Drug	.14	-.04	.01	.36*	.08	-.05	.00	-.01	.01	.09	.01	-.25*	.03
School	.17	-.08	.02	.33*	.08	-.12	.01	.06	.01	.16	.04	-.19	.00
General	.14	-.05	.00	.24*	.09	.03	.01	.03	.01	.05	.01	-.21*	.02
Theft	.10	-.09	.01	.23	.05	.03	.00	.02	.00	.12	.02	-.12	.00
Assault	.09	.20	.01	.28*	.04	-.23	.01	.09	.02	.00	.00	-.01	.00

*denotes significance at our conservative alpha value of $p < .001$
Model R^2 and standardised beta values (β_z) are tested for significance in the linear model.
General Dominance (GD) is computed using the yhat package

Table 7. *The relationship between the Five-Factor Model traits and media piracy and NDS measures multiple linear models and dominance analysis in the Study Two sample.*

		C		A		N		O		E	
Outcome Measure	R^2	β_z	GD	β_z	GD	β_z	GD	β_z	GD	β_z	GD
Media Piracy											
Piracy	.14	-.32*	.08	-.02	.00	.01	.02	.22*	.04	.03	.00
NDS measures											
Vandalism	.06	-.22	.04	-.10	.01	-.01	.00	.11	.01	.07	.00
Alcohol	.15	-.25*	.05	-.10	.01	.11	.02	.21*	.04	.24*	.03
Drug	.16	-.28*	.05	-.15	.02	.03	.01	.23*	.05	.21	.03
School	.19	-.28*	.07	-.17	.03	.10	.02	.25*	.05	.13	.00
General	.18	-.27*	.04	-.14	.02	.08	.01	.22*	.05	.32*	.06
Theft	.10	-.21	.03	-.11	.01	.07	.01	.22*	.04	.13	.01
Assault	.05	.08	.00	-.26*	.04	.08	.00	.13	.01	.07	.00

*denotes significance at our conservative alpha value of $p < .001$
Model R^2 and standardised beta values (β_z) are tested for significance in the linear model.
General Dominance (GD) is computed using the yhat package