



Original Article

Life history strategies and psychopathology: the faster the life strategies, the more symptoms of psychopathology[☆]Jessie E. Hurst, Phillip S. Kavanagh^{*}

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ABSTRACT

There is little extant empirical literature examining the associations between life history strategies and symptoms of psychopathology. The current study ($N = 138$) investigated the associations between life history strategies, symptoms of psychopathology, aggression, incidence of self-harm behaviour, and attachment (perceived parental support) in sample drawn from the general population and community mental health service providers. The results from the study indicate those with a faster life strategy report greater levels of aggression and symptoms of psychopathology. Further, perceptions of poorer parental support were associated with a faster life history strategy. Implications for life history theory, conceptualising psychopathology, and future research directions are discussed.

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1. Introduction

To what extent do early childhood experiences influence later mental health outcomes? Most theoretical literature from a developmental perspective (e.g. Beauchaine & Gatzke-Kopp, 2013; Hinshaw, 2013; Kerig, Ludlow, & Wenar, 2012; Mash & Dozios, 2003) suggests that negative early experiences result in an increased risk of psychological distress and symptoms of psychopathology; however, what are the mechanisms that convert adverse environments into mental health difficulties?

Evolutionary theory is well established in the psychological literature to explain human cognitions, emotions, behaviours (e.g., Buss, 2005), and even psychopathology (e.g. Akiskal & Akiskal, 2005; Andrews & Thomson, 2009; Murphy & Stich, 2000; Wakefield, 1992). More recently an evolutionary–developmental theory of psychopathology, incorporating life history theory has emerged that describes the complex interplay between development, biological, and environmental factors that can result in later psychopathology (i.e. Del Giudice & Ellis, 2016; Ellis & Del Giudice, 2013; Ellis, Del Giudice, & Shirtcliff, 2013). Del Giudice and Ellis (2016) describe how individual differences in life history strategy can lay down the foundations for the development of psychopathology.

1.1. Terminology

Ellis et al. (2013) highlight the discrepancies between the evolutionary perspectives and mental health perspectives with the use and definition of such terms as *adaptive* and *maladaptive*. From an evolutionary perspective any behaviour or trait that affords an organism an advantage that increases its' chances of survival and reproduction is considered adaptive; however, from a mental health perspective adaptive is synonymous with *desirable*. It is possible that traits and behaviours that are biologically adaptive may cause an individual psychological distress and/or interpersonal difficulties. Therefore, consistent with Ellis et al. (2013) we will use the term *adaptive* to represent biologically adaptive and *desirable* to represent what mental health professionals often refer to as “adaptive” as to avoid any confusion between adaptive processes and socially desirable processes.

1.2. Life History Theory

Put simply, life history theory elucidates the allocation of resources between specific components of fitness to enhance survival and reproduction (Figueredo, Vásquez, Brumbach, & Schneider, 2004; Figueredo et al., 2006; Hill & Kaplan, 1999). Within a life history theory framework, knowledge of the environment and environmental pressures influence individuals' decision making processes about the allocation of resources, finding a mate, the production of offspring, and parental investment. Life history theory describes the adaptive choices made by individuals to optimise reproduction and survival on account of the environment, resulting in different life history strategies and developmental trajectories.

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Extrinsic mortality has been identified as one of the most important environmental determinants of the ideal trade-off between current and future reproduction (Chisholm, 1996; Chisholm et al., 1993; Figueredo et al., 2006). This means that the reality of death from predation, homicide, disease, and accidents will influence the allocation of resources, and consequently life history strategy. According to Figueredo et al. (2004), when the environment is stable and relatively consistent, it is expected that individuals will adapt/naturally select a slow life history strategy (*K-selected*). Slow life history strategies are reflective of somatic efforts over reproductive efforts and parental efforts over mating efforts. The somatic efforts emphasise enhancing the quality and survival of existing offspring by allocating more energy and resources to existing progeny through parental investment, rather than producing more – mating effort (Figueredo et al., 2004). An environment with low environmental risk and stability would facilitate increased parental investment such as responsiveness, reliability, and sensitivity. Life history theory suggests that the optimal reproductive strategy would be a high parenting effort strategy to maximise future reproduction by having fewer offspring, but investing heavily in their growth and development (Chisholm, 1996). Conversely, people with fast life strategies (*r-selected*) allocate reproductive effort over somatic effort, and mating effort over parental effort. This strategy emphasises the increase in production of offspring over the survival of existing offspring (Figueredo et al., 2004; Giskevicius, Tybur, Delton, & Robertson, 2011).

Del Giudice and colleagues (Del Giudice, 2014; Del Giudice & Ellis, 2016) describe four possible pathways for how life history theory may lead to psychopathology. These causal pathways are: 1) adaptive life-history-related traits may be regarded as symptoms, 2) life-history-related traits may be expressed at maladaptive levels, 3) adaptive strategies may yield individually maladaptive outcomes, and 4) adaptive life-history-related traits may increase vulnerability to dysfunction (Del Giudice, 2014, p. 269). Therefore, while the behaviours in which people with a fast life strategy may be biologically adaptive, they are not necessarily socially desirable or conducive to health and well-being in the longer term, with traits and behaviours such as aggression, early sexual activity, and reduced empathy in possible manifestations of a fast life strategy (Del Giudice & Ellis, 2016). Crawford (2000) referred to some of these traits as pseudopathologies to reflect the concept that although these behaviours may have been ancestrally adaptive, they are currently considered dysfunctional. That is, such manifestations, while adaptive, may not be considered desirable from a mental health perspective and would typically be regarded as symptoms of psychopathology (Crawford, 2000; Del Giudice, 2014; Del Giudice & Ellis, 2016).

Other symptoms of psychopathology, such as self-harm, may be the behavioural expression of a number of “fast spectrum” (see Del Giudice, 2014; Del Giudice & Ellis, 2016) symptoms of psychopathology such as novelty seeking, risk-taking, disinhibition, impulsivity, and discounting future rewards in an effort at self-regulation. That is, while engaging in self-harm on the face of it does not appear to be adaptive, when used as a self-regulation strategy, it may help an individual down-regulate for long enough to engage other behaviours that may increase inclusive fitness. Indeed, common explanations for the reasons for self-harming from those who self-harm (i.e., emotional regulation) are consistent with this notion (see for example, Hill & Dallos, 2012; Laye-Gindhu & Schonert-Reichl, 2005; Mangnall & Yurkovich, 2008).

There are consistent findings that males tend to engage in overt aggression (Crick & Grotpeter, 1995; Fanti & Henrich, 2014; Koh & Wong, 2015; Volk, Camilleri, Dane, & Marini, 2012) and females tend to engage in more self-harm behaviours than males (Laye-Gindhu & Schonert-Reichl, 2005; Rodham, Hawton, & Evans, 2005). This sex difference may be due to the potential fitness costs – that is engaging in aggression towards others is more costly for females than males, with greater potential benefits for males; whereas, engaging in self-directed aggression (i.e., self-harm) is less costly for females, given that it is rarely lethal, and provides no fitness benefits for males.

1.3. Family Structure

Men are not equipped with the biology to carry and nourish infants. Therefore, men have an opposing strategy to enhance reproduction whenever plausible. This means that men's reproductive effort may not be with the same partner. Unlike women having more children with their current partner, men with fast life strategies may reproduce with women outside their romantic relationships, or alternatively, leave their current mate and children, to reproduce with another mate. Therefore, it is plausible that these children are more likely to be raised in single parent or stepparent homes.

Children living with one biological parent and one stepparent are 40 times more likely to be physically abused than those living with two biological parents (Daly & Wilson, 1985), with child abuse also a well documented predictor for adverse mental health effects and psychopathology (Daly & Wilson, 1985; Spataro, Mullen, Burgess, Wells, & Moss, 2004; Wolfe, 2007). Children tend to respond to unpredictable and unstable environments by growing up quickly and living in the moment (Ellis et al., 2012). That is, children faced with unstable environments and levels of uncertainty will naturally select strategies that maximise their current reproduction in the face of such difficulties, even at the cost of shortened lifespans and decreased social and emotional functioning (Chisholm et al., 1993; Ellis & Essex, 2007; Tither & Ellis, 2008). One could speculate then, that children from unstable family environments are more likely to develop a fast life strategy and subsequently develop greater levels of psychopathology.

1.4. Attachment, Parental Investment, and Mental Health

There is considerable evidence linking attachment style to childhood social and emotional adjustment. For example, Crawford et al. (2006) investigated the associations between self-reported attachment styles and personality disorders listed in the *Diagnostic and Statistical Manual of Mental Disorders, 4th Edition* (American Psychiatric Association, 2000) and found a positive association between anxious attachment and cluster B and C symptoms, and a positive association between avoidant attachment and cluster A symptoms. The results from Crawford et al. (2006) highlight the effects of early experience and attachment on subsequent mental health, especially personality pathology.

Life history theory explains attachment in terms of parental effort and the resources afforded to rearing and enhancing the survival and quality of offspring (Figueredo et al., 2004; Kaplan & Gangestad, 2005; Quinlan, 2007). Hill and Kaplan (1999) summarised the life history trade-off as being the allocation of reproductive effort to increasing number of progeny (quantity) or increasing the fitness (quality) of existing progenies. This trade-off is assumed to reflect the limited resources of parents to invest in each child, and any future offspring inevitably reduces investment amount per offspring. A life history perspective acknowledges that when resources are scarce, it is not necessarily adaptive to have fewer offspring (mating effort) as to allow increased parental effort; rather the more advantageous strategy would be to invest more energy into offspring production. Chisholm (1996) found that marked individual differences in attachment are strategic as to optimise the trade-off between infant survival versus growth and development. Specifically, children whose mothers have decreased availability and responsiveness, or are more intrusive or rejecting often, show an unwillingness to explore and play. Insecurely attached children show increased aggression, anxiety, and depression when older, and are more likely to develop interpersonal relational difficulties when compared to securely attached individuals (Bartholomew & Horowitz, 1991; Chisholm, 1996). In sum, exposure to mechanisms of a fast life history strategy such as levels of parental investment and environmental hardship potentially places children and adults at an increased risk for developing social, emotional, cognitive, and health problems (Crawford et al., 2006; Del Giudice, 2014; Ellis, 2004; Ellis et al., 2012; Simons, Paternite, & Shore, 2001).

1.5. Aggression

Life history strategies influence parental involvement, with parental involvement in turn influencing aggression (Crawford et al., 2006; Marcus & Kramer, 2001; Simons et al., 2001). Although aggression can be considered to be adaptive from a fast life strategy perspective, from a mental health perspective it is considered socially undesirable and is a predictor of poor social and emotional development, isolation, affective disorders, and personality disorders (Buss & Shackelford, 1997; Campbell, 2008; Crawford et al., 2006; Crick & Grotpeter, 1995; Ellis, 2004; Marcus & Kramer, 2001; Simons et al., 2001). Simons et al. (2001) found that the perceived quality of adolescent/mother attachment was negatively associated with adolescent self-reported aggression. Marcus and Kramer (2001) investigated the relationship between participant's proactive and reactive forms of aggression, attachment with the participant's mother, and pro-social behaviours and concluded that attachment to the mother and pro-social behaviours significantly influences proactive and reactive aggression. Children whom reported less secure attachment with their mothers displayed increased reactive and proactive aggressive behaviour, when compared with children whom reported more secure attachment with their mothers. Draper and Harpending (1982) investigated the effects of father absence during critical periods of development (0–5 years). They found that father absent boys showed greater interpersonal aggression and an increased risk of arrest and incarceration when compared to males from a father present family.

As previously stated perceived mortality is an important environmental contributor to life history strategy. Along these lines Dunkel, Mathes, and Harbke (2011) manipulated perceived life expectancy (i.e., asking participants to imagine they had five months, five years, or fifty years to live) and then asked them about their future criminal intent, and reported positive associations between fast life strategies, earlier death, and great criminal intent. Further, Mishra, Barclay, and Lalumière (2014) found that risk-taking is increased in the presence of a competitive disadvantage, indicating that when individuals perceive they are at a competitive disadvantage they are more likely to engage in risky behaviours, such as aggression. Finally, Figueredo, Gladden, and Beck (2012) have demonstrated the links between life history strategy and engaging in interpersonal aggression and intimate partner violence. The results from all of these studies support the links between life history strategy and propensity for aggression.

Sexual selection theory (Trivers, 1972) predicts that males should be more tolerant to risk given their lower potential cost to reproduction, whereas females have greater potential costs. Given the potential costs associated with aggressive behaviours, males should therefore generally be more aggressive than females. Consistent with this proposition, a number of studies have demonstrated greater levels of aggression in males versus females starting at an early developmental age (see for example, Crick & Grotpeter, 1995; Fanti & Henrich, 2014; Koh & Wong, 2015; Volk et al., 2012). In sum, there appears to be an influence of life history strategy on engaging in risky behaviours such as aggression and that this relationship may vary as a function of sex with men more likely to engaged in aggression and interpersonal violence than women.

1.6. The Current Research

The aim of the current research is to expand the current life history strategy literature by exploring the associations between family structure, life history strategies, attachment, symptoms of psychopathology, and self-harm behaviours. We predict that individuals that report a faster life history strategy will have a greater number of half siblings or stepsiblings and will be more likely to have a stepparent.

With regard to mental health and attachment, we predict that individuals with faster life strategies will 1) report more symptoms of psychopathology; 2) report lower perceived responsiveness of their

caregiver than those individuals with a slower life history; 3) be more aggressive as compared to those with a slow life history strategy; and 4) report significantly higher incidence of self-harm as compared to individuals with a slow life history strategy. Further, we expect that women will report a higher incidence of self-harm than men and that the associations between life history strategy and aggression will vary as a function of sex, with a) males with a fast life strategy reporting higher levels overt aggression and females with a fast life strategy reporting greater levels of self-harm.

2. Method

2.1. Participants and Procedure

Participants were recruited from numerous locations. These included social media websites, a university campus, and multiple community mental health organisations. Two hundred and nine participants initially started the online survey; however, 71 participants did not complete all measures and were subsequently excluded from the final analyses. The final sample ($n = 138$) consisted of 46 men ($M_{\text{Age}} = 36.67$ years, $SD_{\text{Age}} = 15.73$) and 92 women ($M_{\text{Age}} = 33.13$, $SD_{\text{Age}} = 14.16$). Participants self-selected to participate, provided informed consent, were not offered any incentives to complete the survey, and were able to discontinue at any stage. Upon completion of the survey, participants were debriefed and thanked. Exclusion criteria included anyone under the age of 16 years of age. The majority of participants in the sample were from blended families with 83.3% reporting having at least 1 half-sibling and 89.1% reporting having at least one stepsibling, 8.7% reporting having a stepmother, and 10.9% having a stepfather.

2.2. Measures

2.2.1. Attachment

Attachment was measured using the Adolescent Attachment Questionnaire (AAQ; West, Rose, Spreng, Sheldon-Keller, & Adam, 1998). This particular measure of attachment was chosen as the main recruitment sites were community mental health clinics that specialised in the treatment adolescents experiencing mental health concerns. The AAQ is a 9-item self-report measure with three domains (availability, goal-corrected partnership, angry distress) rated on a 5-point Likert scale (1 = *strongly disagree*; 5 = *strongly agree*). The availability subscale quantifies the adolescent's confidence in the responsiveness and availability of the parent or caregiver. The goal-corrected partnership subscale measures the consideration and empathy the adolescent expresses to the needs and feelings of the caregiver. The angry-distress subscale defines the quantity of anger within the attachment relationship. Each domain consisted of three questions each, with the items for each of the three domains demonstrating high internal consistency (see Table 1). Items were thus summed to form a total measure of attachment and the three attachment subscales. The total score of attachment reflects the respondent's perception of their relationship with their caregiver, and their caregiver's responsiveness (West et al., 1998). The subscales and the total measure demonstrated high internal consistency. Refer to Table 1 for the scale statistics for the three subscales and total measure of attachment.

2.2.2. Aggression

Aggression was measured using the Buss-Perry Aggression Scale (Buss & Perry, 1992). The Aggression scale is a 29-item self-report measure with four domains (physical aggression, verbal aggression, anger, hostility) rated on a 5-point Likert scale (1 = *extremely uncharacteristic of me*; 5 = *extremely characteristic of me*). All the items of each of the domains, as well as the total measure, demonstrated good internal consistency and were thus summed to form a measure of each of the four aggression domains, and a total measure of aggression (see Table 1 for the scale and subscale statistics).

Table 1

Summary of means, standard deviations, and Cronbach's α for the AAQ, AGS, Mini-K, and HKSS.

Measure	M	SD	α
Attachment			
Total attachment	15.54	7.63	0.92
Availability	5.63	3.22	0.91
Goal-corrected partnership	4.77	2.75	0.93
Angry distress	5.14	2.84	0.83
Aggression			
Total aggression	59.90	19.62	0.93
Physical aggression	16.81	6.04	0.83
Verbal aggression	11.51	4.84	0.84
Anger	14.30	5.44	0.83
Hostility	17.27	8.05	0.90
Life history strategy			
Mini-K	14.62	11.25	0.84
HKSS	87.34	13.64	0.91

2.2.3. Life History

Life strategies were measured using the Mini-K (Figueredo et al., 2006) and the High-K Strategy Scale (HKSS; Giosan, 2006). The Mini-K has been reported as more superior for assessing behavioural traits of life history strategy than compared to the High-K Strategy Scale that suggests more superiority in physical traits (Figueredo et al., 2006). Both measures were included in the study to provide a more robust measurement of life history strategy and in the current sample were significantly correlated ($r = .71, p < .01$).

The Mini-K is a short form of the Arizona Life History Battery (Figueredo et al., 2004). The 20 item self-report questionnaire measures cognitive and behavioural aspects of an individual's life history strategy and was scored on a 5-point Likert scale ($-2 = \text{extremely uncharacteristic of me}$; $+2 = \text{extremely characteristic of me}$). The scores were summed to produce a total life history score (see Table 1). A positive score is indicative of a slower life strategy (increased parental involvement and fewer extrinsic risks to survival) and conversely a negative score is indicative of a faster life strategy. The Mini-K demonstrated good internal consistency (see Table 1).

The HKSS (Giosan, 2006) is a 22 item, self-report questionnaire that also assesses traits and behaviours of an individual's life history strategy. The statements are scored using a 5-point Likert scale to identify the extent to which participants agree to each item ($1 = \text{strongly disagree}$; $5 = \text{strongly agree}$). The items on the HKSS demonstrated high internal consistency and were summed to produce a total life history strategy score (see Table 1).

2.2.4. Psychopathology

The DSM-5 Self-Rated Level 1 Cross-Cutting Symptom Measure—Adult (American Psychiatric Association, 2013b) was used to measure the intensity and frequency of symptomology across mental health domains of 13 psychiatric diagnoses relevant to the *Diagnostic and Statistical Manual of Mental Disorders, 5th Edition* (American Psychiatric Association, 2013a). These domains are depression, anger, anxiety, mania, somatic symptoms, suicidal ideation, psychosis, sleep disturbances, memory, repetitive thoughts and behaviours, dissociation, personality functioning, and substance use. The questionnaire includes 23 items inquiring about specific symptoms during the past 2 weeks. Each item was rated on a 5-point scale ($0 = \text{none or not at all}$; $1 = \text{slight or rare, less than a day or two}$; $2 = \text{mild or several days}$; $3 = \text{moderate or more than half the days}$; $4 = \text{severe or nearly every day}$). For most of the subscales, a score of 2 or more warrants further inquiry of symptoms; however, for suicidal ideation, psychosis and substance use subscales, a score of 1 (slight) may warrant further investigation. See Table 2 for the percentage of participants whom met the threshold for psychopathology symptom criteria. As we were interested in total psychopathology severity the scores on all items were summed to produce an index of psychopathology ($M = 40.10$, $SD = 14.57$; range = 23 to 84).

Table 2

The percentage of respondents whom recorded a rating on the DSM-5 self-rated level 1 cross-cutting symptom measure indicating a need for further inquiry.

Item	Percentage
Depression subscale	
Little interest or pleasure in doing things?	34.1
Feeling down, depressed, or hopeless?	29.7
Anger subscale	
Feeling more irritated, grouchy, or angry than usual?	36.2
Mania subscale	
Sleeping less than usual, but still have a lot of energy?	28.3
Starting lots more projects than usual or doing more risky things than usual?	18.8
Anxiety subscale	
Feeling nervous, anxious, frightened, worried, or on edge?	35.5
Feeling panic or being frightened?	21.0
Avoiding situations that make you anxious?	34.1
Somatic symptoms subscale	
Unexplained aches and pains (e.g., head, back, joints, abdomen, legs)?	29.0
Feeling that your illnesses are not being taken seriously enough?	15.2
Suicidal ideation subscale	
Thoughts of actually hurting yourself?*	18.8
Psychosis subscale	
Hearing things other people couldn't hear, such as voices even when no one was around?*	7.2
Feeling that someone could hear your thoughts, or that you could hear what another person was thinking?*	6.5
Sleep disturbances subscale	
Problems with sleep that affected your sleep quality over all?	31.2
Memory subscale	
Problems with memory (e.g., learning new information) or with location (e.g., finding your way home)?	15.2
Repetitive thoughts and behaviour subscale	
Unpleasant thoughts, urges, or images that repeatedly enter your mind?	20.3
Feeling driven to perform certain behaviours or mental acts over and over again?	10.1
Dissociation subscale	
Feeling detached or distant from yourself, your body, your physical surroundings, or your memories?	13.8
Personality functioning subscale	
Not knowing who you really are or what you want out of life?	30.4
Not feeling close to other people or enjoying your relationships with them?	26.8
Substance use subscale	
Drinking at least 4 drinks of any kind of alcohol in a single day?*	34.1
Smoking any cigarettes, a cigar, or pipe, or using snuff or chewing tobacco?*	12.3
Using any of the following medicines ON YOUR OWN, that is, without a doctor's prescription, in greater amounts or longer than prescribed?*	9.4

Note: *These items only require a score of 1 as opposed to 2 to suggest that further investigation regarding the symptom presentation is required.

2.2.5. Self-Harm

The Deliberate Self-Harm Inventory (Gratz, 2001) is a 17-item self-report questionnaire that was used to assess the frequency, severity, duration and mechanisms of deliberate self-harming behaviour. For use in this study, we adopted a method of coding and scoring developed by Gratz (2001) to calculate the total frequency of engaging in self-harm behaviours. This is calculated by summing the reported frequency for each of the 17 methods of self-harm queried in the questionnaire. See Table 3 for the individual frequencies of the various self-harm behaviours.

3. Results

3.1. Preliminary Analyses

A series of correlations were conducted to determine the potential influence of subject variables (i.e., age and sex) on the dependent variables. The results from these analyses (see Table 4) indicated that people who were older reported more secure attachment, were less aggressive, and had less psychopathology. Given these multiple associations, age was entered as a covariate in all main analyses as we were interested in the associations between life history strategies and

Table 3

The frequencies of women and men reporting engaging in specific self-harm behaviours.

Self-harm behaviour	Frequency (percentage)			
	Women		Men	
1. Cutting	13	(14.0)	6	(13.0)
2. Burning with cigarette	5	(5.4)	1	(2.2)
3. Burning with a lighter or match	3	(3.3)	3	(6.5)
4. Carving words into skin	6	(6.5)	0	(0.0)
5. Carving pictures into skin	1	(1.1)	0	(0.0)
6. Severe scratching	10	(10.9)	2	(4.3)
7. Biting	6	(6.5)	2	(4.3)
8. Rubbing sandpaper on skin	0	(0.0)	2	(4.3)
9. Dripping acid on skin	0	(0.0)	0	(0.0)
10. Using bleach or oven cleaner on skin	0	(0.0)	0	(0.0)
11. Sticking pins, staples or needles into skin	3	(3.3)	5	(11.4)
12. Rubbing glass on skin	1	(1.1)	0	(0.0)
13. Breaking bones	1	(1.1)	0	(0.0)
14. Banging head	1	(1.1)	5	(10.9)
15. Punching self	4	(4.3)	2	(4.3)
16. Preventing wounds from healing	3	(3.3)	1	(2.2)
17. Alternate forms of self-harm	4	(4.3)	8	(17.4)

attachment, aggression, psychopathology, independent of the effect of age. There were no significant associations between sex and any of the dependent variables, with the exception of anger, with men more angry than women.

3.2. Main Analyses

Given the multiple partial correlation analyses that were conducted as part of the main analyses, we used Bonferroni corrections to protect from type I error (Howell, 2002). As such, statistical significance was set at $p < .002$ (i.e., $.05/30 = .001666$).

3.2.1. Life History Strategies and Family Structure

To test if as predicted a blended family structure was more predictive of a fast life strategy a series of partial correlations controlling for age were conducted between the numbers of biological siblings, half-siblings, and step-siblings, and the two measures of life history strategy, alongside the presence of a step-parent. There were no significant associations at $p < .002$. See Table 5 for the complete set of results.

3.2.2. Life History Strategies and Psychopathology

To examine if there were associations between life history strategy and psychopathology a series of partial correlations were conducted between the life history measures, total scores on the DSM-5 symptom measure, and frequency of self-harm behaviours, controlling for the influence of age. The results (see Table 5) revealed significant

Table 4

Correlation coefficients for attachment, aggression, total psychopathology, and total frequency of self-harm with age and sex.

Total score and subscales	<i>r</i>	
	Age	Sex
Total attachment	-.21*	.06
Availability	-.15	.02
Angry Distress	-.29**	.10
Goal-corrected partnership	-.11	.03
Total aggression	-.39***	.09
Physical aggression	-.36***	.01
Verbal aggression	-.32***	-.06
Anger	-.26**	.19*
Hostility	-.32***	.13
Total psychopathology	-.43***	.01
Total frequency of self-harm	-.15	.01

* $p < .05$.** $p < .01$.*** $p < .001$.**Table 5**

The associations between life history strategy, family structure, psychopathology, self-harm, attachment, and aggression, controlling for age.

	<i>pr</i>	
	Mini-K	HKSS
Family structure		
Number of full biological siblings	.01	.03
Number of half-siblings	-.10	-.20
Number of step-siblings	-.05	-.08
Presence of stepparent	-.19	-.06
Total psychopathology	-.51	-.41
Total frequency of self-harm	-.04	-.17
Total attachment	-.42	-.41
Availability	-.39	-.37
Angry distress	-.44	-.44
Goal-corrected partnership	-.39	-.24
Total aggression	-.46	-.43
Physical aggression	-.44	-.34
Verbal aggression	-.03	-.10
Anger	-.31	-.25
Hostility	-.52	-.52

Note: Significant correlations (Bonferroni correction, $p < .002$) are in bold.

associations between both life history measures and total psychopathology symptom frequency with faster life strategies associated with more symptoms of psychopathology. Neither of the life history strategy measures was significantly correlated ($p < .002$) with frequency of self-harm behaviours.

To determine if, as predicted, the associations between life history strategy and self-harm would vary as function of sex, a series of moderation analyses were conducted using procedures outlined in Hayes (2013), with sex as the moderating variable, and age entered as a covariate. The results did not confirm any main effects for sex or any significant sex by life history strategy interactions.

3.2.3. Life History Strategies and Attachment

To test the prediction that individuals with a fast life strategy would report significantly lower perceptions of parental/caregiver responsiveness when compared to individuals with a slow life history strategy, a series of partial correlations controlling for age, were conducted between both measures of life history strategy and attachment. As can be seen in Table 5 there were significant correlations between both life history strategy measures and all subscales of parental attachment. People who reported less empathy toward their caregivers (goal directed partnership) perceived that their caregivers were less responsive to their needs (availability), and reported greater anger within the attachment relationship (angry-distress) also indicated engaging in a faster life strategy.

To determine if perceived parental support independently predicted life history strategy over and above numbers siblings, two regressions were conducted – one with each life strategy measure. That is, scores on the Mini-K and then the HKSS were separately regressed on attachment, while controlling for age, numbers of half-, step- and biological siblings. The result from these analyses (see Table 6) revealed that perceived parental support was a significant predictor of life history strategy, independent of numbers of siblings.

3.2.4. Life History Strategies and Aggression

Next, a series of partial correlations were conducted to test prediction that people with a faster life strategy would be associated with greater levels of aggression. As can be seen in Table 5, there were significant associations for both measures of life history strategy and all components of aggression except verbal aggression. People with fast life strategies reported more physical aggression, anger, hostility, and overall aggression.

To determine if, as predicted the effect of life history strategy on aggression varied as function of sex a series of moderation analyses were conducted using procedures outlined in Hayes (2013), with sex as the

Table 6

The regression coefficients for predicting life history strategy from attachment, controlling for age and siblings.

Predictors	Mini-K					HKSS				
	b	β	t	95% CI		b	β	t	95% CI	
				Lower	Upper				Lower	Upper
Age (covariate)	0.21	.27***	3.29	0.08	0.34	0.20	.21*	2.51	0.04	0.35
Half-siblings (covariate)	−0.01	.01	−0.01	−2.16	2.16	−1.63	−.10	−1.21	−4.30	1.04
Step-siblings (covariate)	0.21	.02	0.19	−1.93	2.36	0.07	.01	0.06	−2.58	2.72
Biological siblings (covariate)	−0.04	−.01	−0.05	−1.69	1.61	0.01	.01	0.01	−2.03	2.05
Total attachment	−0.60	−.41***	−5.20	−0.83	−0.37	−0.67	−.37***	−4.68	−0.95	−0.38
	$R^2 = .28$					$R^2 = .26$				
	$F(5132) = 10.49, p < .001$					$F(5132) = 9.09, p < .001$				

* $p < .05$.*** $p < .001$.

moderating variable, and age entered as a covariate. None of the results from this series of analyses supported a moderating effect of sex with life history strategy remaining a significant predictor of aggression.

4. Discussion

As predicted, the results from the current study show that faster life strategies are significantly associated with more symptoms psychopathology and aggression. Further, individuals who perceived poorer parental investment and attachment relationships reported a faster life history strategy.

Life history strategies potentially influence mental health and psychological outcomes in a variety of ways (Del Giudice, 2014). In the current study we identified some of the psychological constructs and behaviours that are potentially influenced by an individual's selected life strategy. The current study is a valuable aid in the understanding of life history strategy as a mechanism for the development of psychopathology. More importantly this study provided the insights into the relationship between selected life strategies and an individual's level of psychological functioning from a clinical psychology perspective. More specifically we demonstrated how life history strategies are associated with the manifestation of DSM-5 symptomology.

4.1. Social and Emotional Development

Chisholm et al. (1993) identified a slow life history strategy as optimal for social and emotional development. The current research supports this finding and further suggests that an individual with a fast life history strategy experiences greater social, emotional, and psychological difficulties. This consolidates and builds on previous findings that stipulate that an unstable environment (fast life history strategy) affects social, emotional, and physical development (Chisholm et al., 1993; Coccaro, Berman, & Kavoussi, 1997; Dunkel et al., 2011; Ellis, 2004; Ellis & Essex, 2007; Figueredo et al., 2004; Kaplan & Gangestad, 2005). The results of the current study suggest that a fast life history significantly increases reported psychological dysfunction, self-harm behaviour, and aggression. Individuals from a fast life strategy also endorsed poorer attachment to caregivers.

If a fast life strategy reflects greater efforts to reproduce, it would be expected that individuals from a slow life strategy to report a lower number of stepsiblings and greater numbers of biologically related siblings. The results from our analyses revealed an association between faster life strategies and numbers of half-siblings ($pr = -.20, p = .02$) and step-parents ($pr = -.19, p = .03$). Although these correlations were not significant given our Bonferroni correction, these results do demonstrate a trend that is consistent with life history strategy. If a parent is to adopt a fast life strategy and invest in greater mating effort then it stands to reason that they would have multiple children to multiple partners, leading to fewer resources/time allocated to the existing children (less parental effort), which in turn influences a fast life strategy. The association between life history strategy and family structure is

consistent with the notion that paternal dysfunction and disrupted or broken families influence a fast life history strategy, and subsequently adversely affect the social, emotional and physical development of their offspring (Ellis & Essex, 2007; Tither & Ellis, 2008).

4.2. Attachment

Due to parental effort being an integral component in determining one's life history strategy we assumed that perceived attachment and relationship to the primary caregiver would be a significant factor influencing life history strategies. As predicted the results of the current study revealed significant associations between life history strategies and all scales of reported attachment. Parents who have more children have less time and resources available for parental investment, and the children may have to compete for such resources. Individuals with a slower life strategy are typically exposed to greater parental investment and somatic efforts, compared to reproductive efforts (parents having more children and subsequently more siblings). This greater investment of energy and resources into the development of their offspring facilitates the development of a slower life strategy, in turn nurturing greater attachment relationships. The importance of this parent–child attachment process in predicting life history strategies was also evident independent of the potential influence of the number of siblings (step-, half-, and full) within the family. That is, individuals who reported more positive and secure relationships with their caregivers appeared to have selected a slower life strategy. There is substantial evidence suggesting that poor attachment (reflective of a fast life strategy) creates developmental difficulties in social and emotional functioning (e.g. Crawford et al., 2006; Ellis, 2004; Figueredo & Wolf, 2009; Marcus & Kramer, 2001; Simons et al., 2001; West et al., 1998). Our findings add further support by demonstrating that faster life strategies are associated with greater aggression and more symptoms of psychopathology.

4.3. Aggression

Ellis et al. (2012) highlighted the advantages of aggression for reproductive effort and status within a fast life history. We predicted that individuals from a slow life history strategy would report lower levels of aggression and aggressive behaviours and this prediction was supported by the results. Specifically, individuals from a fast life history reported being more physically aggressive, angry, and hostile, with men more angry than women. This sex difference in anger is consistent with evolutionary theory in that women have a higher replacement cost in regards to reproductive value, males are more inclined to show aggression and provoke confrontations (Buss & Shackelford, 1997; Campbell, 2008). Given that women tend to show more relational aggression than men (i.e., Crick & Grotpeter, 1995) the lack of a robust finding of aggression across domains warrants further investigation within a life strategy context. The Aggression Scale used in the current study did not include items pertaining to relational aggression and exclusion

from peer groups, hence may not have included more common aggressive behaviours of females. Nevertheless, the results of the current research demonstrate that individuals whom receive more parental and somatic efforts, as a result of a slow life history strategy express less aggression than those with a fast life history strategy. This result, coupled with the predictive nature of attachment on life strategy consolidates the findings of Simons et al. (2001) who found that more secure attachment resulted in less aggression. Therefore, a fast life history strategy is not only reflective of lower levels of attachment; it results in a greater number of aggressive behaviours. It is interesting to consider the mechanisms for such aggression and whether the increase in this behaviour is not contingent on poor attachment, but may be due to learned aggression modelled from parents or caregivers with a fast life history strategy.

4.4. Psychopathology

Finally, we predicted that a fast life history strategy would be associated with more symptoms of psychopathology and self-harming behaviours and the results partially supported these predictions. To further investigate we considered gender differences in the incidence of self-harming behaviour. Contrary to prior investigations (i.e. Klonsky, Oltmanns, & Turkheimer, 2003; Laye-Gindhu & Schonert-Reichl, 2005) no significant gender differences were identified in the overall frequency of self-harm behaviours; however, women did report a higher incidence of specific self-harming behaviour such as cutting, and carving words or pictures into their skin. Conversely, men reported banging their heads or variations of this as the most common method. This finding suggests that previous definitions of self-harm may not have provided the diversity of options for men to correctly report their self-harming behaviours.

4.5. Limitations and Future Directions

The results notwithstanding, there are some limitations with the current study. The most salient limitation being that this was a cross-sectional correlational design, invoking the issue of causality. Ideally future research of this type would sample at multiple time points to determine the exact causal nature of family structure, attachment processes, life history strategies, and degree of psychopathology. Most of the participants in the study were females, thus limiting the generalisability of the results; however, this is also typically the demographic who experience mental health problems and seek help in Australia (Ivancic, Perrens, Fildes, Perry, & Christensen, 2014). The AAQ measured perceived parental responsiveness, rather than the traditional categorical models of attachment (i.e., Bartholomew & Horowitz, 1991). Although the current findings relating to attachment were significant, the AAQ may not have adequately reflected items that resonate with adults in regards to the perceived responsiveness of their caregiver. This is because it was developed for use in an adolescent population; however, given that the current research investigated a broad range of ages (16–69), and was attempting to target the lower end of the age range, it was considered most appropriate in this instance. Finally, we chose to use a global measure of psychopathology to gain the best broad-brush strokes indicator of current symptoms of psychopathology. While this was a brief global measure, the strength of using this measure is that it reflects psychiatric diagnoses relevant to the DSM-5 (American Psychiatric Association, 2013a), without increasing participant burden.

Future research should explore which elements or components of fitness of life history strategies are most detrimental to future mental health. The current study demonstrated the important potential influence parental investment and attachment has on determining an individual's life history strategy could be better substantiated using a longitudinal study. It appears that aggression plays an important role as both an adaptive fast life strategies and an undesirable mental health problem associated with psychological distress. More research could

implicate specific vulnerabilities to certain diagnoses or personality functions associated with life history strategies, alongside fast and slow spectrum psychopathologies (see Del Giudice & Ellis, 2016). Alternatively, future research could investigate the role that slow life history strategies play in the development of pro-social behaviours, socially desirable psychological functioning, and coping behaviours.

The current study highlighted the important implications that life history strategies have on later mental health outcomes and life trajectories. The implications for this research raise concern regarding the role that early interventions could play to combat psychological distress and maladaptive coping mechanisms of individuals with a fast life history strategy. More specifically, it may be plausible to develop methods to easily identify individuals who select a fast life history strategy, or identify inter-generational life history strategies in order to determine who is at increased risk for later mental illness or social and emotional difficulties. This study has provided support to life history theory and the results suggest that selected life history strategies directly impact and increase difficulties in psychological, social and emotional functioning, aggression and self-harm behaviours.

Supplementary Materials

Supplementary data to this article can be found online at doi: <http://dx.doi.org/10.1016/j.evolhumbehav.2016.06.001>

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