

The Fraying of Prosocial Behavior Development -are we Losing Self-Control?



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Abstract

While we generally have a clear idea that positive community actions are based on prosocial and inclusive attitudes, the last decades have produced ever more visible evidence of violent behavior against individuals often not even known to the perpetrators, as well as distinct acts of aggression that seem to lack any clear motivation. Death by individually executed violent acts have also affected family life, producing an alarming number of incidents of violence against women in their own home. International IQ scores have simultaneously taken a downward trend. It is suggested that such seemingly diverse and independent criteria ought to be viewed together. This paper makes the case that modern technological devices might well play a significant, if not crucial, part in diminishing opportunities for any healthy prosocial and cognitive development during childhood. The role of hormones and neurotransmitters is outlined here to demonstrate how trigger events during learning generally, and learning of social cohesion specifically, can be intercepted, slowed or even prevented--to the detriment of the individual and society.

Keywords: Killer kids; Spatial reasoning; Virtual communication network; Self-control; Adaptive social behavior

Introduction

The 21st century has seen the rise of many disconcerting trends in human behavior, ranging from 'king hits', unprovoked fist attacks on an unsuspecting victim, usually unknown to the perpetrator, the relentless rise of violence against women, usually by the intimate partner, including killings of wives and their joint children. Indeed, the UN noted that 1 in 3 women and 1 in 4 men have experienced some form of physical violence by an intimate partner and 1 in 7 women and 1 in 25 men have been injured or killed by an intimate partner. This includes a range of behaviors. Some 58% of female homicides were carried out by intimate partners or family members in 2017, up from 47% in 2012 (UNODC). The latter is not a phenomenon of poorer countries but widespread and rising in highly developed western countries. Then there are incidents of road rage and ever-increasing reports of unprovoked attacks by car drivers on total strangers, such as driving into cafés full of people enjoying a meal or a coffee break on the pavement, on people walking on footpaths doing their shopping or purposely driving into other cars or swiping cyclists off their bikes. Largely specific to the US are armed attacks on and mass killings of school children, often perpetrated by children or juveniles. Additionally, we find that the age of aggressors has dropped

alarmingly and there are now 'killer kids' enjoying the torture and killing of toddlers [1].

Indeed, the UN report of 2020 noted that the number of war death has declined sharply since 1946 and been more fragmented by protracted regional flashpoints. Instead, crime now kills far more than all war related deaths together. The UN Report of 2020 further notes that in 2017, almost half a million people across the world were killed in homicides, far surpassing the 89,000 killed in active armed conflicts and the 19,000 killed in terrorist attacks [2]. There is also the more invisible category of verbal and pictorial abuse and humiliation in social media [3] although not killing the target victim, it has long been known that the effects of such abuse can be severe on the individuals so abused [4]. At the same time, the 21st century IQ scores have dropped for all age groups, regardless of gender. A study by Dworak et al. [5] also found that the steepest declines were among young people. They also noted that while a few skills, such as spatial reasoning, were better than previous generations, other skills, such as problem solving, numerical series assessments and verbal reasoning, had all grown worse [5].

Many individual acts of aggression and expressed violence against unknown victims defy reason but have been linked to abusive childhoods [6], or alcohol or drug abuse [7,8]. I am suggesting here that we need to investigate in more detail other changes in lifestyles across societies that might contribute, if not help explain how increases in violence and lower overall IQ scores can be explained. One area that has received considerable attention is the virtual world of video games, mobile phone texting and social media. It has been acknowledged that some of the negative messages aimed at other individuals peddled on such devices are often permitted to go unchecked [9,10]. There is one aspects of this relatively recent shift from direct communication with peers to a virtual communication network [11,12] that seems to have been understudied or often overlooked, such as potential negative effects on the formation of prosocial behavior and the ability to bond with others, both considered vitally important for the development of well-balanced and mentally healthy adolescents and adults and the latter is the point of this paper.

Diminishing opportunities for bonding and friendships?

Hall & Davis [13] some years ago reiterated what has been claimed consistently that bonding with others is a fundamental human activity and “is necessary for nearly all of the essential tasks of life: survival and reproduction, attachment and affection, work and play, as well as teaching and learning” and that socially engaging with members of one’s network uniquely predict overall health and subjective well-being [13-15]. Indeed, Holt-Lunstad et al. [16] argued that a lack of human contact is a risk factor that can even lead to mortality [16]. However, humans are actually out on an evolutionary limb when it comes to pair bonding. Of all the mammals, only about 5% pair-bond [17]. On the primate line, examples are limited. Marmosets form pair-bonds but the great apes are polygamous, meaning that the link between males and the females who produce their offspring are not necessarily based on close bonds or emotional ties but on social group ties [18]. While humans also live in family groups, such groups are based on paired adults who have formed close, affiliative bonds.

In animals, particularly in birds as a class of animals in which 95% of species have selected for bi-parental care [19] compared to 5% of mammals, I have recently developed a pre-sexual prosociality hypothesis suggesting that those pairs with a juvenile history of bonding will also be more successful in parenting and in producing surviving offspring [20]. Those claims of the greater success of bi-parental care have been tested in a large variety of invertebrates and vertebrates and appear to be widespread if not universal among vertebrates [21]. Close associations are very likely to foster the development and maintenance of prosocial behavior. Indeed, a pre-sexual bond may become a training ground for learning mutual responsiveness between the partners and perhaps even lead to voluntary sharing and mutual support. This development of prosocial behavior has been studied extensively

in humans from childhood to adolescence, and developmental changes have been noted in prosocial behavior in the human brain using simple experiments of costly and non-costly exchanges of gifts [22]. Increasingly, neuroimaging has been used to trace the development of such traits as reciprocity [23]. Self-control is one of the obvious executive functions in which spontaneous and strong emotional impulses registered in the right hemisphere of the brain can be inhibited by the left hemisphere and, presumably, such instances of self-control are often based on learning [24]. For instance, having had an experience when it was ultimately more advantageous to wait than to act might lead to self-control even when a new situation in a different context presents itself.

The simplest form of self-control is deferred gratification. This refers to an individual’s ability to reject something placed before him/her when it is known that something better may turn up. This has been tested in children. Children aged four or five do not do much better than birds or primates in such tasks. In all cases, the subjects were trained to know that the food they were offered in the first instance might not be the last food offered and that the second lot of offerings could contain treats that were far more attractive, provided they did not touch the first. Hence, the individuals had to exercise self-restraint if they wanted the better option. In terms of cognitive ability, self-restraint was clearly a top-down executive function [25]. Research has shown that prosocial and helpful behavior is likely to be stronger and more readily expressed towards someone who is similar to the individual called upon to help [26]. To individuals to whom we attribute qualities similar to our own, there tends to be a more spontaneous chance of active supportive intervention and participation, i.e., prosocial behavior [27] a first step in the emotional ability for selective and enduring attachment to others [20].

Latest research has given more than enough hints to suggest that in some species (humans, great apes and some birds) the cognitive brain had grown in conjunction with the ‘emotional brain’. The latter is a short form for explaining the presences of powerful hormones that regulate stress and induce positive emotions, such as oxytocin [28]. Importantly, considerable research has now shown that oxytocin also modulates various aspects of social behaviors such as empathy, trust, in-group preference and memory of socially relevant cues in humans, and primates [29]. The role of oxytocin has been argued in two ways: the prosocial argument is that oxytocin mainly enhances affiliative prosocial behaviors, often identified as attachment [30], or that oxytocin improves social performance by reducing stress [31]. More oxytocin leads to more cooperative behavior, to strengthened bonds, and may even result in longer lifespans.

Oxytocin is not the only hormone (and neurotransmitter) that has an effect on mood and well-being. Serotonin (5-hydroxytryptamine), a monoamine neurotransmitter, controls mood and certain functions in the brain. Low levels of serotonin have been associated with depression and normal levels have

an impact on sleep. Other actual biological functions, while complex and multifaceted, may include impacts on memory, learning, cognition generally and even sexual appetite. Dopamine (3,4-dihydroxyphenethylamine) partly with its own network, is commonly described as the 'reward' neurotransmitter while serotonin is often thought of as alleviating stress and promoting relaxation. It may be said that dopamine plays important roles in executive functions, motor control, motivation, arousal, reinforcement, and reward.

In some mammals it has been found that the dopamine system plays a key role in partner preferences and maintenance [32], providing a window into the underlying neuroendocrine system that may explain key elements in social attachment or even the emotional ability for selective and enduring attachment to others. Studies in neuroscience have talked about a social behavior network within the basal forebrain and midbrain that is common to all vertebrates from teleosts to birds and mammals and a mesolimbic reward system that forms a larger social decision-making network [33,34]. At the very least one can say that the ability for adaptive social behavior and possibly for voluntary decision making [35] towards others of the same species is foregrounded by these ancient and well-preserved networks. Such networks have been shown to be activated in both involuntary and voluntary behaviors. Adriaense et al. [36] included in their assessments of prosociality also synchrony, mimicry and emotional contagion, all forms of aligning behavior with that of another person. While this, in itself, is not yet an expression of prosociality, it can certainly be a step in that direction and may well be part of a precondition for its emergence. Their findings have not just relevance to humans but can be found in a wide range of species, including birds [37].

As Hove & Risen [38] have shown, interpersonal synchrony increases affiliation and can increase cooperative behavior. The term 'cooperation' may also be used in a wider social context, however, and can signal a consistent form of prosocial behavior which may be adaptive. Cooperation, more broadly, refers to any behavior that is supportive of any individual in an entire family group and possibly wider social contexts. Interestingly, cooperation may not, in itself, suggest that the persons cooperating are fully aware of someone else's emotional state, nor necessarily help because they recognize a problem that one individual cannot solve alone. They may be asked to help or even be coerced to some extent into participating in whatever situation demands the involvement of several persons [39]. Cooperation can even be extinguished if others exploit a helpful disposition [40]. However, individuals that recognize that a job that matters cannot be done without their help and then assist voluntarily, have to have acquired the ability for prosocial thinking.

There is yet another category of spontaneous cooperation and this, so far, has been thought to apply exclusively to humans. It is based on love and attachment of a bonded pair or a mother and

child. Numan & Young [41] found some remarkable similarities between the neural mechanisms underlying these two types of bond formations arguing that some well-preserved mechanisms allow stimuli to persistently activate circuits that lead to and maintain enduring social attractions as well as mother-infant bonding in mammals generally [41]. Not all of these examples by themselves indicate that close cooperation means deep attachment, although it can reflect this. By itself, not everyone would call this a 'prosocial' behavior. However, if one individual warns another of impending danger and then proceeds to help and fly to the scene of turmoil or high risk, certainly suggests the kind of behavior one would not hesitate to call prosocial. Another way to describe prosocial behavior is as 'self-other resonance' [42], perhaps even a first step towards theory of mind, i.e., the ability to attribute mental states of intents, desires, emotions, or knowledge to oneself and to others. I like the term "self-other-orientedness", first used by Chatterjee & Bhattacharjee [43] as an alternative to the term 'prosociality' because, it makes the point well that the becoming of orientation towards some other individual is a substantial and, indeed, a very large step in evolution of human survival (working as a team rather than as individuals, collaborating rather than fighting each other), as I have outlined elsewhere [20,44].

Prosociality is apparently also related to intelligence. A recent study by Guo, et al. [45] concluded that intelligence is associated with self-reported prosocial behaviors in daily life and that higher intelligence is "contributive to emotional sensitivity and a greater concern for others" [45]. Another recent paper also confirmed that intelligence is associated with self-reported prosocial behavior in daily life [39]. Hence, there is some support for the view that prosocial behavior is a preparation for social bonding if one views pro-sociality as a self-other resonance, the ability of an organism to connect with another in emotional and significant ways.

The alternative to high levels of prosociality are low levels of prosociality (also of empathy), and these also have to be investigated, as a powerful reminder of the importance of such qualities in children, adolescents and adults. Importantly, Stern & Cassidy [46] summarized the effects of low levels of empathy at different stages of development. In children, low empathy is associated with poor peer relationships, hostility, and bullying; in adolescence, it manifests as aggression and antisocial behavior and, in adults, low empathy is linked to domestic violence, child abuse and general violence [46]. Following the extensive literature on prosocial and generally 'other-directed behavior', the conclusion must surely be that the stakes are rather high for humans to continue to fully develop and maintain such traits.

Conclusion

Development is a dynamic process, be this in the brain, in hormonal activations, in behavior, in social contacts and contexts as well as in the environment. It seems to me that these direct

and intimate formations of friendship, are based on face-to-face exchanges, on personal and intimate encounters of face reading and registering the responses by the other person, which in turn leads to and strengthens the activation of hormones, such as serotonin. How else could it develop? The distance of anonymous or at least virtual messaging gives a person's body no or perhaps insufficient opportunity to 'tune in', to activate vital hormonal and brain processes and to consider (subconsciously or consciously) the feelings of another and to learn how to modify or fine-tune behavior, especially when a response is unexpected. Without such development, others may not only remain strangers at an intuitive level, but individuals so used to distance interactions, may fail to develop the hormonal and thus psychological (cognitive and emotional) adjustments to respond to possibilities of intimacy. Such loss, as has been identified, is often reflected in low levels of serotonin which is associated with depression and antisocial behavior. Basically, the person suffering a loss of connection to others is 'punished' most: a sense of loneliness, depression and meaninglessness that, at times, can also turn into aggression in order to be heard, to pass on the pain of being forlorn.

We would need far more research on establishing what (and how many) hours of impersonal contacts with peers and adults across social media, mobile phones in preference to direct contacts and interactions might do, given that all the finer points of face-to-face social interaction are missing. One study found that even small acts of mimicry, be this of body or facial expressions or repeating verbal statements might lead to being moved by another person [47]. Somehow, as I suspect, intercepting a child's learning ability capable of reading the feelings of others and moved to respond to them, can be disrupted or permanently impaired by this new emphasis (by choice) on technologically induced social distance. Since we know the function of hormones and their effect on thinking and feeling rather well, it should be relatively easy to test experimentally. A great deal might hinge on those findings.

Results have already shown that there is not just a dramatic increase in child, adolescent and unprovoked adult violence but also an ongoing and even alarming increase in the incidence of depression among adolescents [48, 49]. These dramatic trends may well have a good deal to do with a decline in acquired prosocial behavior and a corresponding drop in hormone levels that facilitate prosocial behavior. Of course, there are many other factors involved, but they may be symptoms rather than causes. Very recent data also show that the presence of depressive symptoms in childhood triggers "a reduction of 0.342 in standard deviation (SD) and -3.83 points in the average IQ of adults (p-value < 0.001)" [50]. These figures are indeed disconcerting. Intelligence can thus decline as a direct consequence of depression and depression can be a direct consequence of not having acquired basic social skills and that may have to do with an increase in virtual screen time and a reduction in meaningful face-to-face social interactions and failing to form social peer bonds while growing up. Losing the glue of prosocial and other-directedness as the basis for cooperation

and community-mindedness would be catastrophic for the human species.

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