

Aggression, Anger, Hostility, Irritability, Violence:

What Are the Solutions?

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Why is aggression different from other psychiatric symptoms? Ambivalence about its desirability

Because of the interpersonal power, and other reinforcing consequences, it has conveyed throughout human evolution and conveys to this day.

“Predation and defense” are skills evolution has selected for.

For this reason aggression is often divided into two types: 1) instrumental, proactive, calculated, ego-syntonic; 2) impulsive, emotional, reactive, ego-dystonic. The latter tends to respond more to psychiatric intervention.



Violence is entertaining.



2021 Harris poll: 33% of US adults boxing fans,
30% fans of mixed martial arts

Violence is entertaining.

Grand Theft Auto: 335 million units sold in series since first installment late 1990s.



Call of Duty: Reported to have been played for at least 25 billion hours, during which an estimated 32.3 quadrillion virtual shots at imaginary people had been fired. (I'm guessing that 32.3 trillion is more accurate. But it still remains a very large number.)

Halo: More than 136 billion kills



Hamlet: 9 major characters (almost all of them) meet violent deaths.



It's very widely believed that training children in fighting skills improves their behavior and mental health

“The market size of the martial arts studio sector in the United States saw consistent year-over-year growth between 2012 and 2019, before experiencing a slump in 2020, most likely due to the coronavirus (COVID-19) pandemic. The industry reached its peak in 2019 at 10.63 billion U.S. dollars....” (Source, Statista)

“The martial arts variable failed to show a statistically significant effect on behavior, in either of the regression analyses; in fact, the f^2 effect size for martial arts was 0.000 for both analyses. The 95% confidence intervals for regression coefficients for martial arts variables have upper and lower bounds that are all close to zero. The analyses not only fail to reject the null hypothesis, but also render unlikely a population effect size that differs greatly from zero. Conclusion: The data from the ECLS-K fail to support enrolling children in martial arts to improve mental health outcomes as measured by classroom teachers.” Strayhorn, J. M., & Strayhorn, J. C. (2009). Martial arts as a mental health intervention for children? Evidence from the ECLS-K. *Child and Adolescent Psychiatry and Mental Health*, 3, Article 32. <https://doi.org/10.1186/1753-2000-3-32>

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Anger, irritability, aggression, hostility, violent behavior in the DSM5

To say that hostility, irritability, etc. are not specific to any one diagnosis is an understatement.

I turned every page of the DSM5 and examined disorders where hostility was part of the listed criteria or “associated factors supporting the diagnosis”

How many disorders included this symptom?

DSM5 disorders including hostility

By my count, the answer is 52.

This did NOT include:

Antidepressant discontinuation syndrome

Intellectual disability

Specific LD with impairment in reading

Major neurocognitive disorder (dementia)

ADHD

Very common presenting problem

“Aggression is believed to be the single most common reason for referrals to child and adolescent mental health clinics reaching as high as 50% to 60%.”

Green's Child and Adolescent Clinical Psychopharmacology,
Bowers et al. 6th edition, Wolters Kluwer, 2019.

Categories of influences and remedies

Biological

Learning-based

Situational/environmental

Pinker: *The Better Angels of Our Nature*. Factors reducing violence:

Inconsistent:

Weapons and
disarmament

Resources

Affluence

Religion

Consistent:

The Leviathan

Gentle Commerce

Feminization

Expanding circle

Escalator of reason

Regarding guns

“Evidence from 130 studies in 10 countries suggests that ... implementation of laws targeting multiple firearms restrictions is associated with reductions in firearm deaths. Laws restricting the purchase of (e.g., background checks) and access to (e.g., safer storage) firearms are also associated with lower rates of intimate partner homicides and firearm unintentional deaths in children, respectively.”

Santaella-Tenorio et al. *Epidemiol Rev* 2016;38:140–157, What Do We Know About the Association Between Firearm Legislation and Firearm-Related Injuries?

Guns continued

“In Washington, DC, the adoption of the gun licensing law coincided with an abrupt decline in homicides by firearms (reduction... 23 percent).”

Loftin et al. New Eng J Med 1991 325:1615-20

“In this 5-year analysis, states with stricter gun laws and laws requiring universal background checks for firearm purchase had lower firearm-related pediatric mortality rates.”

Goyal MK, Badolato GM, Patel SJ, et al. State Gun Laws and Pediatric Firearm-Related Mortality. Pediatrics. 2019;144(2):e20183283

Guns: USA compared with UK and Japan

USA about 120 guns owned per 100 persons

UK about 5 guns per 100

Gun ownership in Japan 0.3 per 100

Homicide rate 6.8 per 100K in USA, 1.2 in UK, 0.2 in Japan. About 20 in Syracuse, about 58 in Baltimore

In UK most common method stabbing, only 4% shooting

In USA 74% of homicides by shooting

In Japan (pop 125 million), about 285 homicides in 2021; in Baltimore (pop 585 thousand), 348 homicides in 2019

Lao Tsu: Ahead of our time, in 6th Century (?) BCE

Tao Te Ching – Verse 31

“Weapons are the tools of
violence;

all decent people detest
them.

Weapons are the tools of
fear;

decent people will avoid them
except in the direst necessity

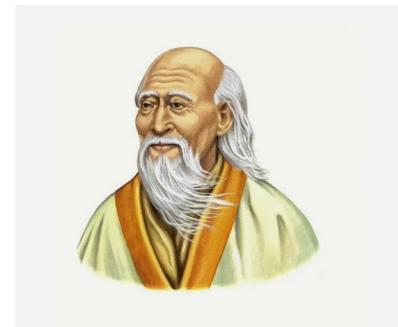
and, if compelled, will use them
only with the utmost restraint.

Peace is their highest value.

If the peace has been
shattered,

how can they be content?

Their enemies are not demons,
but human beings like
themselves.”



Affluence vs. poverty

“Children from lower SES households have a higher incidence of child maltreatment and have worse outcomes, including significantly higher in-hospital mortality among hospitalized children.”

Imran et al. J Investig Med . 2019 Feb;67(2):346-349. doi: 10.1136/jim-2018-000858. Association between socioeconomic status and risk of hospitalization due to child maltreatment in the USA

(6 x higher mortality in lowest than highest ses group)

Poverty and firearm deaths

“A total of 67 905 firearm-related deaths among youth (predominantly composed of 60 164 male individuals [88.6%]) from 2007 to 2016 were analyzed....Firearm-related mortality risk increased in a stepwise manner with increasing county poverty concentration....This calculation translated to 34 292 firearm-related deaths that would not have occurred if all counties had the same risk as counties with the lowest poverty concentration.”

Barrett et al. *JAMA Pediatr* 2022 Feb 1;176(2):e214822. doi: 10.1001/jamapediatrics.2021.4822. Association of County-Level Poverty and Inequities With Firearm-Related Mortality in US Youth

Poverty's effect on homicide mediated by 3rd grade reading skill!

“Neighborhoods within the highest tertile of youth homicide mortality differed from those in the lowest tertile with ... greater unemployment (17% vs. 8%, $p < 0.001$), familial poverty (35% vs. 16%).”

“Causal mediation analysis demonstrated mediation effects of familial poverty ... through third grade educational achievement ... with no significant direct effects.”

“Higher educational achievement (operationalized by reading proficiency) predicts reduced homicide mortality among Baltimore youth and appears to mediate effects of familial poverty on homicide mortality as well.”

Bray et al. Injury Epidemiology (2020) 7:20

<https://doi.org/10.1186/s40621-020-00246-1> Educational achievement and youth homicide mortality: a City-wide, neighborhood-based analysis

Genetics

“Evidence from twin, family, and adoption studies will establish the case for the importance of genetically transmitted factors in the genesis of aggressivity from childhood through adulthood.” Cadoret et al. *Psychiatr Clin North Am* 1997 Jun;20(2):301-22. doi: 10.1016/s0193-953x(05)70314-2. Genetics of aggressive and violent behavior.

Specific genes for extreme violence?

“In developed countries, the majority of all violent crime is committed by a small group of antisocial recidivistic offenders.... Our results, from two independent cohorts of Finnish prisoners, revealed that a monoamine oxidase A (MAOA) low-activity genotype (contributing to low dopamine turnover rate) as well as the CDH13 gene (coding for neuronal membrane adhesion protein) are associated with extremely violent behavior (at least 10 committed homicides, attempted homicides or batteries)....At at least about 5-10% of all severe violent crime in Finland is attributable to the aforementioned MAOA and CDH13 genotypes.”

Tiihonen J et al. Mol Psychiatry 2015 Jun;20(6):786-92. doi: 10.1038/mp.2014.130. Epub 2014 Oct 28 Genetic background of extreme violent behavior

Lead exposure and violence

“BLLs ranging from 5 to 9.99 $\mu\text{g}/\text{dL}$ were associated with physical violence ($p=0.03$) and BLLs $\geq 10\mu\text{g}/\text{dL}$ were associated with physical violence and fighting ($p=0.02$ and $p=0.01$, respectively). When data were analyzed using continuous BLLs physical violence was associated with lead exposure ($p<0.0001$).”

Nkomo et al., Environ Int . 2017 Dec;109:136-145. doi: 10.1016/j.envint.2017.09.004. The association between elevated blood lead levels and violent behavior during late adolescence: The South African Birth to Twenty Plus cohort



Alcohol and violence

“Ramstedt... using Australian data... finds that a 1 litre increase in per-capita consumption [per year] is associated with an 8% increase in the Australian homicide rate, a relationship that is comparable to that found by Norström of 9% increase overall for the U.S.”

Graham K, Livingston M, 2011. The Relationship between Alcohol and Violence – Population, Contextual and Individual Research Approaches. *Drug Alcohol Rev.* 2011 September ; 30(5): 453–457. doi:10.1111/j.1465-3362.2011.00340.x.

Alcohol continued

“Between 2006 and 2016, 20% of violent crimes and 7% of non-violent crimes in Canada were considered attributable to alcohol.”

Young et al., 2021. Attributable fractions for substance use in relation to crime. *Addiction*, 116, 3198–3205. doi:10.1111/add.15494

Alcohol in homicide victims

“A total of 71, 031 toxicology test results, derived from 78, 265 homicide victims across 13 countries (most from the United States), were examined.... On average, 48% of homicide victims tested positive for alcohol and 33% (using the 0.08 threshold) or 35% (using the 0.10 threshold) were determined to be intoxicated.” (?? Looks like they got some numbers reversed.)

Kuhns JB et al., 2011. A meta-analysis of alcohol toxicology study findings among homicide victims. *Addiction* 106(1):62-72. doi: 10.1111/j.1360-0443.2010.03153.x.

In what order should we try meds for aggression?

Answer 1: That depends primarily upon the diagnosis.

Answer 2: That should be determined largely by the relative position of meds in the rank ordering of long term safety.

How would you rank order these regarding long term safety?

Stimulants (sympathomimetics) (methylphenidate and amphetamine)

Alpha 2 agonists (clonidine and guanfacine)

Atomoxetine

Bupropion

Propranolol

SSRIs

Second generation antipsychotics

Anticonvulsants

First generation antipsychotics

Lithium

Stimulants for Aggression In ADHD

“Papadopulos et al. (2006) published a review of eight RCTs utilizing psychostimulants (predominantly methylphenidate) in the treatment of aggression in youth with ADHD with or without comorbid ODD, CD, and MR. The impact of psychostimulants on decreasing aggression was very significant with an impressive effect size of 0.78.”

Bowers et al., Green's text, p. 396

More on methylphenidate for aggression in kids with ADHD

“A total of 64.9% of the children showed oppositional defiant disorder/conduct disorder (ODD/CD) symptoms. A statistically significant effect was found in the group treated with MPH On the basis of Cohen's criteria, high effects were found for aggressive symptoms in school ($d = 1.0$), but not in the afternoon ($d = 0.4$).”

Sinzig et al. 2007, Long-acting methylphenidate has an effect on aggressive behavior in children with attention-deficit/hyperactivity disorder *J Child Adolesc Psychopharm* 17(4):421-32. doi: 10.1089/cap.2007.0011.

Effect of methylphenidate on “emotional dysregulation”

“Emotional dysregulation (ED) is a frequent feature of attention-deficit/hyperactivity disorder (ADHD).... Emotional dysregulation ... was present in 85.6% of cases.... Symptoms of ADHD and ED were significantly improved with 1-year of MPH treatment ($P < 0.05$). The improvement in ED was independent of improvement in ADHD symptoms....”

Kutlu et al., Effect of Methylphenidate on Emotional Dysregulation in Children With Attention-Deficit/Hyperactivity Disorder + Oppositional Defiant Disorder/Conduct Disorder. *J Clin Psychopharmacol* 2017 Apr;37(2):220-225. doi: 10.1097/JCP.0000000000000668.

Methylphenidate compared with risperidone in kids with ADHD and aggression

“Although the nonrandomized, nonblind design limits the conclusions of our exploratory study, our findings suggest that when ADHD is comorbid with ODD and aggression MPH and risperidone are both effective on aggressive behavior, but only stimulants are effective on ADHD symptoms.”

Masi et al. A Naturalistic Comparison of Methylphenidate and Risperidone Monotherapy in Drug-Naive Youth With Attention-Deficit/Hyperactivity Disorder Comorbid With Oppositional Defiant Disorder and Aggression *J Clin Psychopharmacol* 2017 Oct;37(5):590-594. doi: 10.1097/JCP.0000000000000747.

Methylphenidate for conduct symptoms without ADHD

“We randomly assigned 84 children with CD, between the ages of 6 and 15 years, to receive methylphenidate hydrochloride (up to 60 mg/d) or placebo for 5 weeks. Two thirds of the children also met criteria for ADHD.... Contrary to prediction, ratings of antisocial behaviors specific to CD were significantly reduced by methylphenidate treatment. The magnitude of methylphenidate effect indicated meaningful clinical benefit. Partialling out severity of ADHD did not alter the significant superiority of methylphenidate on CD ratings specifically ($P < .001$).”

Klein RG et al. Clinical efficacy of methylphenidate in conduct disorder with and without attention deficit hyperactivity disorder. Arch Gen Psychiatry 1997 Dec;54(12):1073-80. doi: 10.1001/archpsyc.1997.01830240023003.

Findings on SSRIs are complex

Meta-analysis: “in children and adolescents the risk of suicidality and aggression doubled” with SSRI and SNRI.”

Sharma et al., Suicidality and aggression during antidepressant treatment: systematic review and meta-analyses based on clinical study reports *BMJ*. 2016; 352: i65. doi: 10.1136/bmj.i65: 10.1136/bmj.i65

“From Swedish national registers we extracted information on 856,493 individuals who were prescribed SSRIs, and subsequent violent crimes during 2006 through 2009.... With age stratification, there was a significant association between SSRIs and violent crime convictions for individuals aged 15 to 24 y (HR = 1.43, 95% CI 1.19–1.73, $p < 0.001$.”

Molero Y et al. 2015. Selective Serotonin Reuptake Inhibitors and Violent Crime: A Cohort Study. *PLOS Medicine*
<https://doi.org/10.1371/journal.pmed.1001875>

Risperidone is efficacious for aggression

“Pappadopulos and colleagues (2006) identified nine RCTs of aggressive children and adolescents being treated with risperidone. All nine studies showed greater reductions in aggression compared to those with placebo in subjects with CD, ODD, ADHD, autism, and MR/ID. The overall effect size of risperidone was quite high at 0.9.” Bowers et al., Green's C&A Clin Psychopharm

Haloperidol Neurotoxicity

“A review of the literature suggests that haloperidol exerts measurable neurotoxic effects at all doses via many molecular mechanisms that lead to neuronal death. A similar effect was observed in 2 other FGAs, but the effect in SGAs was much smaller and occurred mainly at high doses.”

Nasrallah HA, Chen AT, Multiple neurotoxic effects of haloperidol resulting in neuronal death, *Ann Clin Psychiatry* 2017, 29, 195-202.

Dependency and Withdrawal Problems with Antipsychotics

“Long-term administration of antipsychotics can upregulate D 2 receptors and produce receptor supersensitivity manifested by behavioral supersensitivity to dopamine stimulation in animals, and movement disorders and supersensitivity psychosis (SP) in patients.”

“ Continuous D 2 occupancy by antipsychotics, within or above the threshold for prolactin and movement disorders (i.e., in the 72–78% range), increases D 2 density as a compensatory reaction to reduced dopamine-mediated signaling. As D 2 density increases, the therapeutic level of D 2 occupancy (65%) becomes higher, and previously efficacious doses are insufficient to suppress or cover psychotic symptoms.”

Chouinard et al. 2017. Antipsychotic-Induced Dopamine Supersensitivity Psychosis: Pharmacology, Criteria, and Therapy. *Psychother Psychosom* 2017;86:189–219 DOI: 10.1159/000477313

Proposal re. Algorithm: Propranolol Between Stimulants and Antipsychotics

Hypothesis: That stimulants come first, alpha 2 agonists next, propranolol next, antipsychotics after propranolol (or other beta blocker).

“Propranolol inhibits rage and anger through its effects on the central nervous system. This effect has been demonstrated in a variety of neuropsychiatric disorders.... Here, we present 46 retrospective analyses of clinical cases that were followed by a psychiatrist. Propranolol was prescribed as an add-on to the patients' existing medications. The doses ranged from 120 to 960 mg per day (mean = 462 mg). Findings/Results: Thirty-nine (85%) of 46 patients were found to be much improved or very much improved on the physician-rated Clinical Global Impression Improvement scale. There were few side effects noted, with only 2 subjects unable to tolerate the propranolol.

London et al. 2020 . The Safety and Effectiveness of High-Dose Propranolol as a Treatment for Challenging Behaviors in Individuals With Autism Spectrum Disorders. *J Clin Psychopharmacol* 2020;40: 122–129

Check my bibliography on beta-blockers (mostly propranolol) for aggressive behavior

Presenter's guess is that

- a. The reason risperidone got an FDA approval for aggressive behavior (in autism) and beta-blockers didn't was that the beta-blockers were off patent at the time and the SGAs were not.
- b. The reason the SGAs are given so much more often for aggression is the blessing given by FDA approval (risperidone and aripiprazole for irritability in autism).

Nonpharmacologic Treatments

OH RAM PRISM Methods of influence

1. Objective formation (e.g. motivational interviewing)
2. Hierarchy (gradual steps)
3. Relationship (positive, with mentor)
4. Attribution (belief in one's own capacity)
5. Modeling
6. Practice (fantasy rehearsal a prime method)
7. Reinforcement and punishment
8. Instruction
9. Stimulus control
10. Monitoring

Psychological Skills to Promote by Above Methods

1. Productivity
2. Joyousness
3. Kindness
4. Honesty
5. Fortitude
6. Good decisions
7. Nonviolence
8. Respectful talk
9. Friendship-building
10. Self-discipline
11. Loyalty
12. Conservation
13. Self-care
14. Compliance
15. Positive fantasy rehearsal
16. Courage

One of the basics of treatment of aggression: what's our general strategy?

Only one is correct:

Option 1: To help the person find harmless ways of releasing anger, venting it, getting it out of the system. Implicit: Not venting leads to harmful consequences. (Like not urinating or defecating.)

Option 2: To teach people that the major task is not to get anger out, that it is NOT harmful not to vent. The major task is to choose and practice wise responses to provocations, whether they be external or internal.

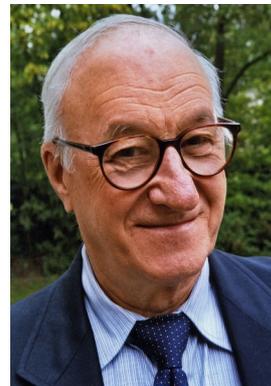
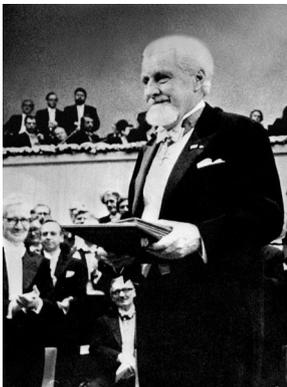
From New York State Foster Parent Manual:

“Teach a child to use words when he or she is angry, rather than kicks, hits, or bites. When a child needs a more forceful outlet than words, encourage him or her to hit a punching bag, a pillow, or a tennis ball against an appropriate outside wall, to vent feelings.”

Social Learning, Applied Behavior Analysis, CBT model

Response generalization: modeling, encouragement, reinforcement, or practice of certain behaviors makes other similar ones more likely – these are said to be in the same “response class.”

If “venting” behaviors are in the same response class as harmful aggression, efforts to increase them are predicted to increase, not decrease, behaviors of harmful aggression. Observing violence tends to make violent behavior more likely rather than draining off the urge for it. Fantasy rehearsal increases the strength of behaviors. Thus there are two theories (represented by Konrad Lorenz and Albert Bandura) with diametrically opposed predictions.



From Bushman, Baumeister, & Stack 1999, J. Personality and Social Psychology

“Tavris (1988) concluded that 'It is time to put a bullet, once and for all, through the heart of the catharsis hypothesis. The belief that viewing violence (or “ventilating it”) gets rid of hostilities has virtually never been supported by research' (p. 194). Because activities considered to be cathartic are also aggressive, they could lead to the activation of other aggressive thoughts, emotions, and behavioral tendencies, which in turn could lead to greater anger and aggression....”

Same article:

Sample size of 707 college students

Assigned to punching bag versus not

Subjects were angered by someone's criticizing something they wrote.

Aggression measured by choice of loud noise delivered to person in another task.

“People who did not hit the punching bag were less, not more, aggressive than people who hit the punching bag.”

“These results directly contradict the catharsis hypothesis.”

Anger control training strategy

1. Teach categories of nonviolent options for responding to provocations, conflicts, and criticisms.
2. Generate big lists of provocations, conflicts, criticisms.
3. Practice repeatedly with generating options and choosing the wisest one possible for provocations and criticisms. Role-play conflict resolution conversations. Practice while calm to build up sufficient habit strength to be reasonable in the heat of the moment.
4. Criterion for wisest: best for my happiness and that of the person(s) I affect.

Weighing Options

Behaviors for provocations: Ignoring, differential reinforcement, assertion, conflict-resolution paradigm, criticism paradigm, relaxation, rule of law, away from situation, apologizing, friendliness, force that's nonviolent, tones of voice. (Ida Craft)

Thoughts for provocations: Not awfulizing, goal-setting, listing options and choosing, celebrating your own choice

Conflict resolution paradigm: Defining, reflecting, listing, waiting, advantages, agreeing, politeness (Dr. L.W. Aap)

Criticism: Thank you, planning to ponder or problem-solve, agreeing with part, asking more specific, reflection, I want or I feel, silent eye contact, explaining the reason, criticizing the critic. (T Paarisec)

Biofeedback Strategy

Can people learn to control voluntarily their autonomic nervous systems, particularly sympathetic (flight or fight) arousal? Yes.

With increased arousal, heart rate goes up, skin conductance (from sweat) goes up, fingertip temp goes down, muscle tension goes up.

All of these can be monitored electronically and the results displayed to the user.

Over time, the user can discover and practice strategies of increasing and decreasing the parameters.

Relaxation strategies taught, rather than just waiting for discovery

1. Breathe and relax the muscles
2. Mind-watching
3. Mantra
4. Visualizing scenes
5. Imagining acts of kindness
6. Inspiring quotes
7. The good will aka loving kindness meditation
8. The pleasant dreams exercise
9. Simple rest
10. Meditation with movement
11. Psychological skills meditation

Combination of biofeedback and fantasy rehearsal

Fantasy rehearsing responding rationally to provocations (big lists of them) while noticing the physiological response. (Celebrate either way: signs of arousal mean good imagining. Lack means celebrate handling situation in low-arousal way.)

Four thought exercise: Not awfulizing, goal-setting, listing options and choosing, celebrating your own choice.

Presenter's favorite anger reduction technique done with kids is doing many four-thought exercises, student taking turns with preceptor, with biofeedback as adjunct. (But overall most evidence for effectiveness in technique of slide after next!)

“Away from the situation” as a response to provocation

One intervention, hypothesized to be life saving upon occasion:

Teach family members that:

When any member of a dyad feels angry over a certain “fairly low” threshold, it's time for

<- -> the two people to become physically separated – e.g. not in the same room.

Either person can declare the necessity, preferably, though not necessarily, with polite words. Storming off with no words is better than sticking in the situation and escalating!

The procedure must be rehearsed before the heat of the moment.

There must be agreement that walking away is NOT disrespectful.

Parent Management Training

“During PMT, parents are taught to identify the function of maladaptive behavior, to give praise for appropriate behavior, to communicate directions effectively, to ignore maladaptive attention-seeking behavior, and to use consistent consequences for disruptive behaviors.... The efficacy and effectiveness of PMT have been evaluated in >100 randomized controlled studies (Dretzke et al. 2009; Michelson et al. 2013) and excellent treatment manuals are available for clinicians (Kazdin 2005; Barkley 2013). There is evidence that the improvements in child behavior are stable over time and can prevent antisocial behavior in adulthood (Scott et al. 2014).”

Sukhodolsky DG et al. 2016 Behavioral Interventions for Anger, Irritability, and Aggression in Children and Adolescents. *J Child Adolesc Psychopharm* 26, 58-64, DOI: 10.1089/cap.2015.0120

A Parenting Pearl – Differential Reinforcement and Excitement

Using the concept of differential reinforcement – finding a way to make examples of frustration tolerance, kindness, rationality more reinforced than aggression -- is central to parenting.

For many kids, excitement is reinforcing even if the emotional valence is negative.

If parents can comment on positive behavior with excitement and negative behavior in monotones, the long range effect can be very positive.

The Concept of Emotional Climate

What is ratio of approval to disapproval?

Are there “mutually gratifying activities”?

Can people trust each other?

Can people deal with joint decisions, including conflicts, in a rational way?

Part of parent training should be understanding violent media

“Violence in screen entertainment media (ie, television, film, video games, and the Internet), defined as depictions of characters (or players) trying to physically harm other characters (or players), is ubiquitous. The Workgroup on Media Violence and Violent Video Games reviewed numerous meta-analyses and other relevant research from the past 60 years, with an emphasis on violent video game research. Consistent with every major science organization review, the Workgroup found compelling evidence of short-term harmful effects, as well as evidence of long-term harmful effects. The vast majority of laboratory-based experimental studies have revealed that violent media exposure causes increased aggressive thoughts, angry feelings, physiologic arousal, hostile appraisals, aggressive behavior, and desensitization to violence and decreases prosocial behavior (eg, helping others) and empathy.”

Anderson CA et al. 2017. Screen Violence and Youth Behavior. *Pediatrics* (2017) 140 (Supplement_2): S142–S147.

Reading -> Behavior -> Reading...

Morgan et al., 2008: Are reading and behavior problems risk factors for each other? J Learning Disabilities, 41, 417-436

About 125 references in this article

Summary of article: Yes.

Reading problems and behavior problems

Greenbaum et al. (1996) found that the percentage of children with emotional and behavioral disorders (EBD) reading below grade level increased from 54% to 85% across the study's seven-year span. Nelson, Benner, Lane, and Smith (2004) reported that 83% of their study's sample of children with EBD scored below the norm group on a standardized measure of reading skill.

From article, “Predictors of Antisocial Personality”

“Lower IQ and reading problems were most prominent in their relationships with childhood and adolescent antisocial behaviour.” Simonoff....Rutter et al., British J. Psychiat. 2004

Reading as a mediator in the well-known association between IQ and behavior problems!!

Stanton et al., 1990:

“When reading ability was entered in the regression equation before IQ, then reading but not IQ significantly predicted change in problem behavior during the primary school years. The results indicated that the association between IQ scores and problem behavior was mediated by reading ability.”

Effects of Telephone Tutoring on Reading Skills

