Empirical testing of evolutionary hypotheses has used to test many theories both directly and indirectly.

Why do empirical testing?

In fact, the general theory of evolution has been accepted as more or less true. Below the general theory are “middle” level theories such as parental investment and sexual selection. For example, women bear the burden of nine months of gestation and, in a sense, have a different kind of “parental investment”.

Evolutionary psychologist predict and the test the hypotheses, based on their investment, that women will choose mates who are willing to invest resources in them and their children and will divorce men who fail to provide these resources.

This approach is called a deductive reasoning approach. The researcher develops theories and goes about engaging in hypothesis test and data collection to develop or support that theory. This is also called top down empirical research.

In contrast to this approach, the inductive reasoning approach starts with observations and builds theory from this. This is also called bottom up empirical research.

In either approach, accurate predictions made by theory can help to support that theory telling researchers that they are on the right track while inaccurate predictions call the theory into question.

From the evolutionary perspective, three main areas of interest have generated some interesting and illuminating findings. These areas are:

- human nature
- sex differences
- individual differences
Human nature has always been at the very core of more of the grand theories of psychology.

- Freud – sex and aggression
- Adler – striving for superiority
- Skinner – domain general learning mechanisms
- Robert Hogan – the desire for status and acceptance by the group (a grand theory?)

From this perspective, human nature is the primary product of the evolutionary process. **Psychological mechanisms** that are successful in helping humans survive and reproduce tend to out-replicate those that are less successful. These mechanisms are also the mechanisms that make humans different from mammals and other lower species.

**Need to Belong**

Hogan argues that the most basic human motivators are status and acceptance by the group. The most important social problems early humans had to solve in order to survive and reproduce involved establishing cooperative relations with other members of the group and negotiating hierarchies. Achieving status and popularity likely conferred a host of reproductively relevant resources on an individual, including better protection, more food, and desirable mates.

Being ostracized from a group was extremely damaging. It may have been the stimulus for the development of **social anxiety** which is the distress or worry about being negatively evaluated in interpersonal situations.

Researchers wanted to see what behaviors elicit social anxiety to see if these had some evolutionary consequences. Some of these behaviors include:

- cowardice in the face of danger
- displaying aggression toward in-group members
- trying to lure away the mates of in-group members
- stealing from in-group members
- murdering in-group members

Do the data support this hypothesis?

Empirical evidence supports the contention that the need to belong is a central motive.
- Groups share info, food, and other resources (increase resources results in increase in group cohesion – radio)
- Groups offer protection from external threats and defense against rival groups (WWII)
- Groups contain concentrations of mates needed for reproduction
- Groups provide the opportunity to receive altruism and invest in genetic relatives

Altruism is a direct function of the recipients’ ability to enhance the inclusive fitness of the helpers. As the degree of relatedness decrease so should the level of altruism or helping. The data support this hypothesis.

This varies with the context (life or death vs. everyday situations), with age (youth > elderly), with trivial helping (old > youth), and with famine situations (youth > elderly). Keep in mind the reproductive capacity of the individual. Youth have a greater potential than elderly individuals.

**Universal Emotions**

Are facial expressions interpreted the same ways across cultures? This might represent universal criteria of adaptation. Or, if all humans share an adaptation, like smiling to express happiness, that adaptation is likely to be a core part of human nature.

Or, fitness affordances suggest that emotions guide the person toward goals that have conferred fitness in ancestral environments or that would avoid conditions that interfere with fitness.

Or that a “manipulation hypothesis” might suggest that emotions are designed to exploit the psychological mechanisms of other people.

Research has demonstrated that seven different emotions including; happiness, disgust, anger, fear, surprise, sadness, and contempt are recognized nearly universally!

Emotion may be a “central component” of personality.
Sex Differences
Evolutionary psychology predicts that males and females will the *same* or *similar* in all the domains in which the sexes have faced the same or similar adaptive problems. It predicts that, in other domains, men and women have faced substantially different adaptive problems over human evolution and, in these domains men and women will be different.

For example, women face childbirth while men do not. There may be differences in information processing between men and women as between paternity and maternity.

Women have faced the need to find and replenish their food and supplies, especially for their off-spring.

*Evolutionary-predicted sex differences* holds that the sexes will differ in precisely those domains where women and men have faced different sorts of adaptive problems. Men and women are psychologically different.

- What domains have men and women faced different adaptive problems?
- What are the sex-differentiated psychological mechanisms of women and men that have evolved in response to these sex-differentiated adaptive problems?
- Which social, cultural, and contextual inputs affect the magnitude of expressed differences?

These include differences in *aggression, jealousy, desire for sexual activity*, and *mate preference*.

**Aggression**

- Males have a propensity for aggressive behavior based on past evolutionary demands, i.e., fighting for women and resources
- There are differences in obligatory parental obligation in raising children
- There is *sexual dimorphism* among males and females
- Violence occurs at the top and bottom of the hierarchy of males
- Men die on average 7 years earlier than women
- Findings on aggression support the evolutionary, universal nature of aggression and across many cultures
Jealousy

- May be related to the risk on not passing on genes
- Women appear to respond to imagining their partner emotionally involved with another
- Men appear to respond to imagining their partner having sexual intercourse
- The “double shot” involves men believing that their woman will have intercourse they will become emotionally involved while women have a “reverse double shot” believing that if their mate becomes emotionally involved they will have intercourse.
- Findings on jealousy support the universal nature of this issue and across many cultures

Sexual variety

- With less investment in parenting the member will be less discriminating and choose multiple mates, so, men will be far more likely to seek and be interested in multiple women
- Huge study (n=16288) males desired 13 partners over 30 years and women 2.5 partners
- Appears to be a large and universal effect

Mate preference

- Women place more value on financial resources and the qualities that lead to those resources (ambition, industriousness, and dependability) while men place more value on physical appearance (a cue to fertility)
- Multi-culture research supports this contention
- Interesting studies on consent to sex with a stranger
  - Supports the contention of increased sexual interest in men
**Individual differences**

- Adaptive self-assessment of heritable qualities
  - A secondary reaction to heredity
  - Skinny men vs. muscular men and their choice of aggressive strategies
- Frequency dependent alternative strategies
  - The two sexes exist in roughly equal numbers because of frequency dependent selection. If one sex becomes rare relative to the other, evolution will produce an increase in the number of the rarer sex. Frequency-dependent selection, cause the frequency of men and women to remain roughly equal.
- Parental investment a man could provide vs. the quality of his genes
  - There is a trade off
    - Restricted sexual strategies (if a woman is parental investment then delay intercourse and prolong courtship to make sure there is commitment)
    - Unrestricted sexual strategies (if woman is seeking quality of his genes there is no delay on her part which might delay intercourse and this would defeat the main adaptive reason for her mating strategy)
    - These strategies are maintained by frequency dependent selection
    - The same may be true for psychopathy
      - Cooperators and cheaters
      - The increase in mobility may result in increases in the psychopathic “strategy”

Environmental triggers result in specific sexual strategies
- (father absent vs. father-present homes)