

The Founder Effect and how it will impact the Future of the Amish

Abigail Jones | FLG 165: Amish in North America

INTRODUCTION

What is the “Founder Effect,” and why does it pose a compelling threat to the future of the Amish? Well, the Founder Effect is the phenomenon that refers to the migration of a small group of people into a larger population to settle in another environment, in this case, the Amish settlements throughout the Midwest. In 2019, an online article published by ThoughtCo stated, “The founder effect is a case of genetic drift caused by a small population with limited numbers of individuals breaking away from a parent population.” Since the ancestral gene pool of the Amish is approximately 200 people.

Since they do not typically marry outside their communities, new genetic variation is prevented from entering their gene pool.

Genetic mutations tend to persist in Amish communities, especially dwarfism, aka Ellis-Van Creveld syndrome, one of the most prevalent disorders of the Amish. **This poster will explore why this disorder is the most common and why the Founder Effect will impact the future of the Amish community.**



Amish child with Ellis-Van Creveld Syndrome

Why is Ellis-Van Creveld syndrome so common among the Amish?

The founding group of the Amish possessed the gene for polydactyly (extra toes or fingers).

WHY IS IT COMMON?

POLYDACTYLY GENE

The Amish population has increased, but since very few outside populations have become members (and they do not marry outside of their community), the gene pool is full of polydactyly genes.

These recessive genes need two copies of the gene to cause the disease, which is why it is so prominent in the Amish communities, with their small selection of current communities.

SUPPORTING DATA AND RESEARCH

As the population gene pool bottlenecks into a smaller and smaller selection, the research that follows this course of action is not surprising. “If a population loses adaptive genetic diversity, one might expect the loss of fitness due to increased susceptibility to infection” (O’Brien). It is known that a smaller gene pool is often linked with infectious diseases, and the founder effect is due to the small gene pool but also the act of inbreeding.

In a brief study done by ClinicalTrials.gov, they conducted an observation of genetic diseases. In this study, they found, “The Amish and Mennonite peoples have a high rate of intermarriage (inbreeding) within their communities, resulting in a high incidence of inherited disorders. Many disorders, such as cartilage-hair hypoplasia, Ellis-van Creveld syndrome, and others, are rarely seen outside these communities. New research using state-of-the-art methodologies in genetics will add to current knowledge about the causes and symptoms of these disorders that will eventually aid in their diagnosis and medical management.”

CONCLUSION

This Founder Effect or inbreeding process could create an entirely new subset of the human species. Since the gene pool has never been smaller in another set of communities, it is unlikely that we will see anything similar in the future. The process of the Founder Effect would have a terrible impact on the future of the Amish community if not for the genetic diseases that surround their settlements already. However, they may become more physically inept over time.

Rare disorders of dwarfism are becoming more and more common in Amish families. That percentage will only increase considering the rate at which the Amish procreate inside their own communities.

LITERATURE CITED

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