The stability of androgynous names: Dynamics of gendered naming practices in the United States 1880–2016

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ABSTRACT

Scholars have argued that androgynous names—names given to both boys and girls—are unstable because parents prefer single-gender names. This single-gender preference creates bandwagon effects: as a name is increasingly given to girls, it becomes less attractive for parents of boys, and vice-versa. We contrast this bandwagon model with a taste model: in the taste model parents evaluate name gender based on how a name’s spelling or phonology signals its similarity to other gendered names. We first show that previous research on androgynous names makes conceptual errors which render its conclusions unreliable. Using more extensive data and new analyses, we show that popularity for both boys and girls for most androgynous names tends to rise and fall in tandem, as opposed to popularity with one sex making the name less popular for the other. Androgynous names, moreover, remain in use for longer lengths of time compared to non-androgynous names. In short, androgynous names, although rare, are stably androgynous. Finally, we show that many examples of names switching from one gender to another, such as Leslie or Ashley, were part of a larger shift in tastes which made the long-e suffix more desirable for girls’ names. Following other work on name adoption, and larger debates in the literature on cultural consumption, we argue that gendered baby-naming is more consistent with a taste model of cultural adoption, as opposed to a bandwagon model.

1. Introduction

Given names in the United States are cultural objects that carry significant shared meaning. Names are meant to express a child’s individuality (Lieberson and Lynn, 2003), but also their membership in families, ethnic groups, and religious traditions (Emery, 2013; Zhang, Zuckerman, and Obukhova, 2016). Names are meant to be contemporary, but also to have a timeless character that ages well with their bearers. Choosing names for their children will be the most time and care many people ever give to the adoption of a cultural object. Given names also present an ideal “laboratory” for the study of culture, since they are not sold or promoted by business interests (Lieberson, 2000; Lieberson and Bell, 1992).

Given names in the United States are highly gendered: the vast majority of names are given nearly exclusively to either boys or girls. Androgynous names are not only rare, but Lieberson, Dumais, and Baumann (2000) argue that they are “unstable”—tending to become single-gendered over time as their increased use for children of one sex renders them less attractive to parents whose children are of the other sex, or tending to disappear from usage altogether. In a sense, for Lieberson and colleagues, names are not really androgynous, but simply on a path from one highly-gendered steady-state to another. We revisit these arguments, asking: are androgynous names...
unstable?

The stability of androgynous names has implications for questions at the heart of the study of cultural diffusion: how do people assign meaning to objects? Do people choose objects through a contagion-type process, where adoption is a function of their exposure to other adopters of the object (e.g. Adler, 1985; DellaPosta, Shi, and Macy, 2015; Salganik, Watts, and Dodds, 2006), or do they evaluate cultural objects as members of larger classes of objects, towards which they have dispositions or “tastes” (e.g. Bourdieu, 1984; Cerulo, 2018; Lieberson and Mikelson, 1995)? If androgynous names are unstable and tend either to disappear completely from usage, or have their gender meanings “lock-in” (Shaw, 2015) to a single gender, or rise in popularity with one sex while falling with the other, this supports the contagion model wherein the gender meaning of the name is based on parents’ prior recent exposure to children of different sexes with the name (Lieberson et al., 2000). If, on the other hand, androgynous names are stable, come disproportionately from certain orthographical and phonological classes of names, and the dynamics of individual androgynous names follow the dynamics of phonologically and orthographically similar names, this would be consistent with a taste model.

Our paper is not primarily a replication of prior work, but, because the evidence in Lieberson, Dumais, and Baumann’s (2000) classic paper The Instability of Androgynous Names (Instability hereafter) bears so directly on our questions, we engage with their methods and conclusions extensively. We first focus on two sets of analyses from Instability: analyses arguing that androgynous names became less popular with one sex as a result of increased popularity with the other, and those analyses arguing that androgynous names were shorter lived as boys’ names. We find that conceptual errors in Instability’s analysis render many of its conclusions suspect. Using more appropriate methodology on a more extensive dataset, we find that 1) androgynous names usually rise and fall in popularity for boys and girls in tandem, rather than popularity with one sex making it less popular for the other, and 2) androgynous names remain in use longer than their single-gender counterparts for both female and male children.

We then present our own analyses of taste focused on the gendered meanings of larger phonological and orthographic classes of names, showing that much of the instability in the androgyny of names can be explained by the changing gender meaning of the long-e suffix. We show that, consistent with a taste model, previously established male names with a long-e suffix, such as Courtney or Ashley, have tipped towards use exclusively for girls as the long-e suffix was increasingly used for recently invented girls’ names.

We adopt several conventions to refer to the gendering of names. First, our data only gives us sex as assigned at birth, which we refer to as “sex” as a shorthand. Names are not sexed, but we refer to names as “girls’ names” or “boys’ names” as a shorthand to refer to names that are overwhelmingly given to female or male children, respectively. We refer to names given to significant numbers of both boys and girls as “androgynous.” We refer to the process where a name is given overwhelmingly to children of a single sex as “gendering” the name, and to such names as “gendered.” Finally, we refer to given names simply as “names.”

2. Contagion and taste in the adoption of cultural objects

Contagion and social influence explanations for the evaluation and adoption of cultural objects point to factors in the immediate social environment to explain the adoption of cultural objects. These explanations are “object-specific” in that it is the idiosyncrasies of the careers of individual objects that determine their spread, rather than how objects fit within a larger class of similar objects. These models generally feature a “bandwagon” effect wherein the popularity of objects leads to increased adoption. Salganik and colleagues, for instance, show that experimental subjects are more likely to download and listen to songs that they can see are more popular among fellow subjects (Salganik et al., 2006). Models of the diffusion of cultural objects over networks also generally feature a contagion/bandwagon type dynamic wherein adoption is a function of exposure to the object (e.g. DellaPosta et al., 2015). In recent years, these kinds of explanations have been ascendant (e.g. Godart and Mears, 2009; van de Rijt, Eran, Charles, and Steven, 2013), although bandwagon effects may not be as strong as once thought (Lynn, Walker, and Peterson, 2016; van de Rijt, 2019). Instability likewise features a contagion argument, positing that androgynous names are unstable because of a bandwagon effect where parents wish to give their children, especially male children, a gendered name. Because parents judge the gender of a name based on the choices of other contemporaneous parents, as a name begins to gain popularity for one sex, the name will fall out of usage for the other sex.¹

Taste-based explanations for the adoption of cultural objects argue that individuals have dispositions towards cultural objects (Bourdieu, 1984; Vaisey and Lizardo, 2016). Tastes are argued to be the product of prior socialization into aesthetic communities (Wohl, 2015), and socialization into these communities with similar tastes allows individuals to “read” the implicit meanings of cultural objects. Cerulo (2018), for example, shows that in blind smell tests, focus groups can correctly decode the sociodemographic groups targeted by perfume marketers.

Taste therefore allows individuals to assess objects as parts of larger classes, as opposed to the object-specific explanations of contagion models. In a contagion model, for instance, liberals may be more likely to drink lattes than conservatives because both liberals and conservatives have observed a partisan divide in latte drinking, which then becomes self-reinforcing (DellaPosta et al., 2015). A taste-based model might argue that conservatives have a disposition towards “consumer ethnocentrism” and thus prefer products of American origin. Although lattes are produced domestically, they are a fairly recent adoption from Europe, and are therefore less attractive to conservatives (Mutz and Rao, 2018). Thus, in a contagion model, preferences for lattes are determined by the contemporaneous reaction of political partisans to a specific good, while in a taste model, lattes are seen as part of a specific class of goods, towards which partisans have pre-existing affinities and aversions.

Although tastes are mostly durable at the individual level, tastes generate dynamism in the adoption of cultural objects for a

¹ Instability also features a taste argument in that they point out that most androgynous names lack a clear gender anchor, such as highly gendered suffix (2000: 1266-1267). Yet, this argument is not central to their explanation of the dynamics of androgynous names.
number of reasons. First, population level tastes can change as a result of cohort replacement (Kiley and Vaisey, 2020; Vaisey and Lizardo, 2016). Second, although people may have a taste for certain classes of cultural objects, specific objects will move in and out of these classes for various reasons. Lattes, for instance, might leave the class of “culturally foreign goods” as newer generations of Americans are exposed to them from a young age. Thus, a static and durable “consumer ethnocentric” disposition might generate dynamic and increasing popularity of lattes among conservatives as lattes take on domesticat associations.

3. The instability of androgynous names?

Most names in the United States are highly gendered, in that they are given almost exclusively to newborns of one sex. As exceptions to the gendered rule, “androgynous” or “unisex” names—names that are given to both boys and girls in appreciable numbers—have been studied with an eye towards how they maintain, or fail to maintain, their androgynty. This research has mostly concluded that androgynous names are “unstable”, in that most of these names appear to be in the process of falling into disuse, or of transitioning to being used exclusively for one sex (usually female) (Barry and Harper, 1993; Lieberson et al., 2000).

Instability makes a contagion argument: as more girls were given a name, that name would be seen as “contaminated” by parents of newborn boys, and therefore would be given to fewer boys in a self-reinforcing process ending with the name becoming a predominantly girls’ name (the reverse also occurred as more boys were given girls’ names, but this, Instability argued, was less common). In an analogy to Schelling’s (1969) model for the segregation of neighborhoods, names tended to become highly gender segregated. Like other cultural objects, the meaning of a name becomes “locked-in” (Shaw, 2015) over time as it tends towards becoming stably single-gendered. Lieberson and colleagues also showed that androgynous names tended to fall out of use for boys more rapidly than their single-gendered counterparts.

Instability used descriptive statistics, visualizations, and statistical analysis to build their case—a strategy that we follow here. Below we present our data before revisiting two core claims of Instability: that bandwagon effects lead to single-gendering of androgynous names and that androgynous names fall out of usage faster than do unisex names. For both of these claims, we find conceptual issues that render the interpretation of Instability’s results suspect. We first reevaluate Instability’s contagion model, showing that the popularity of boys’ and girls’ names rise and fall in tandem, as opposed to popularity for one sex making it less popular for the other sex. Second, we reevaluate the lifespan of androgynous names, showing that names which are more popular for one sex remain in use longer for the other, compared to the lifespan of uni-sex names. Our analyses cast doubt on the idea that androgynous names are unstable and on the contagion model generally.

3.1. Taste and the stability of androgynous names

Although Instability featured a contagion-based model, most of Lieberson’s work on baby names develops and employs foundational taste-based arguments. Lieberson’s first major work on names argued that “esthetics dispositions” governed how people chose names, and choices of name suffix, etymology, and uniqueness varied according to gender, race, and class (Lieberson and Bell, 1992:511). Lieberson and Mikelson showed that when experimental subjects were shown a list of unfamiliar and recently invented distinctively African American names, they were able to accurately infer the name’s intended gender 70% of the time, showing that shared tastes allowed subjects to “read” the intended gender of unfamiliar names. “Wrong” guesses of a name’s gender were also patterned in that subjects tended to agree on the same gender even when they were wrong. Most subjects (89%), for example, incorrectly thought that Chanti was a girls’ name, likely because the i suffix is nearly exclusively found in girls’ names (1995:934). Thus, Lieberson’s work showed that children’s names were gendered according to how their spelling and phonology (particularly the suffix) placed them into gendered classes.

Because taste explains much about how parents gender names, taste is the natural alternative theory for the gender dynamics of androgynous names. Nevertheless, simply showing that Instability’s model of contagion does not well describe the dynamics of androgynous names leaves open many other possible explanations. We therefore, finally, present an analysis showing that, of the relatively few names that are unstably androgynous, many of these names can be explained with a taste model, through the changing gender meaning of the phonological class of names they belong to. Specifically, we show that names with a long-e suffix increasingly became associated with girls through the “birth” of new girls’ names with a long-e suffix, and this led long-e names that were previously given to boys to shift to being given to girls.

Before moving to data and analysis we note that neither we nor Instability are claiming to have an exhaustive theory about why names are gendered, androgynous, or change gender. Both we and Instability argue about how names become or stay gendered or androgynty. Moreover, like Lieberson, we base our explanations on “internal mechanisms,” or features of the system of names itself, rather than external influences such as might come from celebrity or major cultural events. External influences on names tend to be less important than is generally assumed, and tend to be filtered through internal mechanisms (Lieberson et al., 2000:81–84). In any case, an exhaustive theory of name gender is simply beyond the scope of this paper.

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2 Instability used the Schelling model as a rough analogy. However, the Schelling model should not be taken too literally to apply to names, as, unlike moving into neighborhoods, the adoption of names is not zero-sum: one child “moving into” a name does not mean another has to “move out.”

3 We do not have any reason to believe that Instability’s data analysis was in error; we focus here on the interpretations of the results of these analyses.
4. Data

We use baby names data from the US Social Security Administration (SSA). These data contain the number of boys and girls given baby names, according to sex assigned at birth for each name, with a minimum threshold of at least five occurrences for either boys or girls or both in a given year from 1880 to 2016 across the U.S., as recorded on social security cards. These data contain 96,174 unique names given to roughly 340 million children born over this period across the entire United States. Defining girls’ and boys’ names as names wherein 80% or more of children given the name are girls or boys, respectively, we find that 58,168 (61%) of these names were girls’ names, and 31,972 (33%) were boys’ names, the remaining 6,034 (6%) names were androgynous. Some people born before 1937 did not obtain a social security card, and before 1986 children who died before receiving a social security card are not included in the data (Twenge, Abebe, and Keith Campbell, 2010:20). Despite these caveats, the scope of these data is unmatched in measuring the popularity and gendered consumption of cultural objects: rarely do researchers have access to systematic cultural data spanning the entire United States over more than a century.

Although our differences with Instability stem from conceptual, rather than data, issues, it is worth briefly comparing our data. Instability examined data from the Illinois Department of Health. These data included all white births in Illinois during the years of 1916 to 1989, and 1995. Their dataset includes 7,011 unique names, given to just under 11.5 million children. Of these names, 4,332 (62%) were girls’ names, 2,455 (35%) were boys’ names, and 226 (3%) were androgynous. Our dataset therefore has a similar gender distribution to Instability’s, but contains roughly thirty times the number of births and fourteen times the number of names. Our data cover 62 more years than the data in Instability, which is important since trends in naming can occur over very long time spans (Lieberson, 2000:103). Our dataset contains non-white births, making it somewhat different from Instability, although these differences do not bear on the conceptual problems with Instability. Additionally, as we show in an appendix, for New York State, where data on race is available, differences in the gendering of names are minimal across race/ethnic groups.

The SSA data is available by state, allowing us to examine geographic variation in naming practices. To do so, we computed pairwise correlations in overall name popularity from 1910 to 2016 across the 50 US states. We kept only names which were given to at least 2,000 people nationally, since below that popularity there are many missing values for names in the less populated states (99% of the population in our sample were given one of these 4,514 names). We treated names separately for boys and girls; that is, if a name was given to both boys and girls, it enters the analysis here twice: once for its popularity with boys, and once for its popularity with girls. Correlations between states are generally high, with a mean pairwise correlation of $r = 0.91$. Of the 2,256 pairwise correlations, the lowest is between Mississippi and Nevada at $r = 0.61$. Correlations even between culturally dissimilar states are often rather high, such as an 0.82 correlation between Alabama and Maine. Thus, since geographic differences are modest, we use the national dataset throughout.

US baby name phonology, as with English generally, cannot be inferred from spelling alone. To obtain phonology data we web-scraped behindthename.com (BTN) and babynamenes.net (BNN). For each website, we attempted to scrape phonology data for the 96,174 unique names in the SSA data. We matched 5,332 names in BTN and 5,639 names in BNN, for a total of 8,414 unique names. 95% of the 2,557 names we found on both websites had the same pronunciation on both websites. We then used machine learning to impute the pronunciation of suffixes for the 87,760 SSA names not listed on either website. We first extracted a list of the 17 most common name codas (final sounds) in our BTN and BNN data. Using our web-scraped data we trained a series of naïve Bayes classifiers to predict the remaining names’ suffix phonology based on a name’s last letter and last two letters. The average within-sample accuracy using ten-fold cross-validation for these classifiers is over 97%. Accuracy rates are high because of a tight match between most spellings and the coda: for example, names ending in a almost certainly end in the schwa, or “uh” sound, and names ending in ie nearly always end on a long e sound.

We treat every existing spelling of a name as a separate name. We do so because homonyms, such as Tony and Toni, often have entirely different gender connotations. To some extent this inflates the total number of names in our analysis, as some homonyms may have very limited differences in meaning (e.g. Alison vs Allison). However, to treat homonyms as being the same name would greatly, and artificially, inflate our count of androgynous names.

Below, we introduce Instability’s arguments and analyses in greater detail for both of Instability’s major claims around bandwagon effects and the lifespan of names. We first discuss the conceptual argument and the specific analytic procedure employed by Instability. We then present our own analyses, modified to address the conceptual issues with the analyses in Instability. Finally, we present an analysis of taste through the changing gender meaning of the long-e suffix.

5. Bandwagon effects

In this section we introduce Instability’s arguments about bandwagon effects in the popularity of names for each sex in more detail, discuss conceptual errors in Instability’s analyses, and present alternative analyses. We address three related arguments about androgynous names. We ask: 1) whether children of one sex being given a name makes the name less popular for children of the other

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5 We also dropped all data for 1960 because the data for that year have excess missing data and numerous inconsistencies.
6 The state-level data begin in 1910 rather than 1890 when the national data begin.
7 A “coda” is the last sound in a word, or name. Note that this is distinct from the last syllable, for instance, the name Jack is monosyllabic, but its coda is only the “hard k” sound.
sex—what Instability referred to as “contamination;” 2) whether there is some popularity threshold that, if reached by one sex, precludes popularity with the other; and 3) of names which have a dynamic sex-ratio, are the sex-ratio dynamics consistent with bandwagon effects?

5.1. Contamination?

Instability argues that, for any given name, as it rises in popularity for children of one sex, its popularity for children of the other sex should begin to fall. As Lieberson and colleagues describe the process:

The instability of androgyny is due to the following feedback process: as the proportion of girls, for example, with a name increases, this will decrease the likelihood that sons will be given the name and may—if anything—increase the disposition to give the name to daughters. In turn, this further increases the female proportion, and that means an even larger segment of parents will find the name unattractive for newborn sons, and so on (2000:1256).

Accordingly, the year-to-year correlation of popularity with boys and girls for any given androgynous name should be negative. 8 A second prediction, following Instability’s arguments, is the year that a name’s popularity peaks for boys and the year it peaks for girls should be far apart in time, as popularity with one gender rises while the other continues to fall, leading to a negative correlation between when the name peaks in popularity for one sex and when it peaks for the other. This prediction also follows from an alternative model where, since names are competing with thousands of other names for attention (Mark, 2003), the gender connotations of names might be forgotten over time, and, consequently, a name could have a resurgence long after it fell out of use, but this time for children of the other sex.

We first note that it is rare, even for androgynous names, to follow the sort of the trajectory described in Instability, where a name’s popularity for children of one sex eventually overtakes and replaces popularity for children of the other sex. Of the 1,523 androgynous names in our dataset that are ever given to more than 100 children in a year, 410 are still androgynous as of their last year in the dataset and 1,113 names are single-gendered (as defined by being comprised of more than 80% of one sex). Most of these names retain their original, starting gender: for example, when a name given to more than 80% boys in its first year becomes androgynous later on, but “returns” to being a boys’ name (given to more than 80% boys) by its final year in the dataset, and vice versa for girls’ names. By this definition only 85 androgynous names (about 5%) switch from one gender to the other in the manner described by Instability.

To look more closely at the dynamics of individual androgynous names, following Instability, we selected androgynous names that were given to at least 0.2% 10 of boys or girls in at least one year, giving us 39 unique names. Only seven of these names ever reach 0.2% of births for both boys and girls. We find two prototypical bandwagon patterns, as exemplified in the names Leslie and Riley. Whereas Leslie exhibits an “X” pattern, Riley exhibits a “fork” pattern (see Figure 1 below). Both patterns are consistent with what Instability would predict: as the name grows in popularity for one sex, it declines in popularity for the other sex. Critically, however, these are the only two names out of the 39 most popular androgynous names that display either of these patterns. In Figs. 2, 3, and 4 we depict more common patterns.

We now turn to more formal analyses. Instability describes (but does not formally test) a negative correlation in the year-to-year popularity for boys and girls for the top androgynous names. We find that the popularity among boys and girls for androgynous names is typically positively correlated, as depicted in Fig. 2 below. For the 39 most popular androgynous names we find only one name, Leslie (r = 0.590), which had a negative year-to-year correlation between boys and girls born, The mean correlation is 0.41.

Instability’s arguments also imply that the peaks in popularity for boys and girls occur far apart for androgynous names, since one sex’s rise (yielding a yet-unattained peak in the future) causes the other’s decline (yielding a peak in the past), but this again is not borne out in our analysis. Instead, the time between the peak popularity for boys and girls given a name has a median of 4 years. Altogether, the top 39 androgynous names have a correlation of 0.89 for the years when boys and girls peak. In other words, the peaks in popularity for boys and for girls tend to be much closer together in time than we would expect from random chance, and even closer still than we would expect from the kind of bandwagon process described by Instability (see Fig. 2), or from a model where a name’s gender connotation is forgotten.

Varying the 0.2% threshold yields similar findings. For example, for the 0.2% threshold, the years in which the name peaks for both genders has a correlation of r = 0.91, and the percent of boys and girls given the name has a correlation of r = 0.41. Varying the threshold to include 0.01%, 0.05%, 0.1%, 0.2%, and 0.3% yields an average peak year correlation of r = 0.85, and an average

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8 Instability posits a rather deterministic bandwagon model here, but we could reasonably assume that there is also a fair amount of randomness to naming decisions. Bruch and Mare, 2006 showed that random error can generate error cascades in a modification of Schelling’s residential segregation model that leads to relatively integrated neighborhoods (2006). However, these results depend on a relatively high level of randomness in the choices that people make for neighborhoods (van de Rijt, Siegel, and Macy 2009). Since parents generally give a lot of thought and care to choosing their children’s names (Emery 2013), we do not think there is a great deal of randomness here. Moreover, the vast majority of names are highly gendered, suggesting little randomness with respect to name gendering in the usual case. Finally, while such randomness might stymie the strength of a negative correlation, it is unlikely for it to produce the positive correlations we find.

9 This is a generous definition of single-gendered since names which were androgynous even a year before their last year in the data are counted as single-gendered if, for example, the data recorded 5 boys and was missing for girls in the name’s final year.

10 Varying this threshold yields little substantive difference; increasing the threshold to .3% narrows the number of androgynous names to 20, rather than 39. Lowering the threshold to .1% increases the number of androgynous names attaining the threshold to 67. Relevant statistics are reported in Appendix 2, which demonstrate that, overall, the results of our analyses are not contingent upon a specific threshold being chosen.
correlation of $r = 0.36$ for the percent of boys and girls given a name (see Appendix 2 for full tables).

5.2. Thresholds?

Although we did not see the most basic time-series signatures of bandwagon effects, there is still the possibility that bandwagons generate a more nuanced qualitative pattern. A threshold process could produce a positive year-to-year correlation in popularity for both boys in girls early on, before a bandwagon effect takes hold (see e.g. Riley in Fig. 1 below). As Instability put it:

> At some point, one gender reaches a certain level of usage that then becomes a barrier to expansion by the other group, the latter then declines, and an androgynous name (in terms of its early usage) progressively becomes a name that is favored for only one sex (Lieberson et al., 2000 P. 1273).

In this section, we systematically search names for such threshold type effects. Instability suggests that androgynous names that reach either 0.2% of the population in any given year, or a numerical threshold of over 100 children born for one gender, will become single-gendered. These thresholds are claimed to be tipping points, after which the sex that reaches the threshold first will begin to dominate. To demonstrate this 0.2% threshold, Instability displayed time-series of four names: Casey, Dana, Angel, and Sean (2000: 1276); for this numerical threshold, they displayed time-series of Corey, Kelly, Robin, and Taylor. \(^{11}\) We display these same eight names in Fig. 3 below.

Instability argued, as their central piece of evidence for threshold-effects, that only rarely did one sex reach the 0.2% threshold if the other sex had already attained it. It is not clear, however, how often this should occur even in the absence of threshold effects (in other words, for non-androgynous names). In fact, only 770 names ever reach 0.2% of births, which is less than 1% of the total unique names in our data. Thus, this threshold of 0.2% is already incredibly stringent, for both androgynous and non-androgynous names. Furthermore, we find that it is more likely for a name to reach the 0.2% threshold for one sex if it has reached that threshold for the

\(^{11}\) These names were displayed in Instability because they met a numerical threshold for number of births. We haven’t used a set numerical threshold because the number of children born each year varies so much over time that any given numerical threshold would mean quite different things at different times.
other sex. Specifically, a name is 2.83 times more likely to reach the 0.2% threshold for girls’ names, if it has reached the 0.2% threshold for boys’ names. Similarly, a name is 1.54 times more likely to reach the 0.2% threshold for boys’ names, if it has reached the 0.2% threshold for girls’ names. In sum, it is rare for any name to reach this threshold and, for both sexes, names are more likely to reach the threshold for one sex if the other sex also attains the threshold.

Instability presented the careers of the kinds of names displayed in Figs. 2 & 3 as key evidence for threshold effects, but these names do not follow the prototypical trajectory of a gendered threshold effect. For a prototypical threshold effect, we would expect a period of growth for one gender after it significantly overtakes the other. Instead, we observe that popularity generally falls for the “overtaking” or “contending” sex almost as soon as it starts falling for the trailing sex. For example, in Fig. 3, Taylor rises well above the threshold for both sexes; neither sex seems to drive out the other. Although girls given the names Kelly and Robin surge past the 0.2% threshold, the decline for boys coincides with a decline for girls. With Casey, the 0.2% threshold is reached by boys first, but popularity for both boys and girls is very similar throughout its career.

To summarize, we find little systematic evidence of threshold effects. It is true that in most cases here, one gender peaks at a significantly higher popularity level than the other, but given that name popularity is generally highly dynamic (Berger and Mens, 2009), this is not particularly surprising or meaningful. We cannot rule out, of course, that the trailing sex would have been more popular in the absence of a surge in popularity for the dominant sex. However, this is a far cry from the threshold model’s prediction that the newly dominant sex, that which reaches the threshold first, will continue to rise in popularity as the trailing sex begins to fall.

5.3. Gender-Dynamic names

In the previous sections we showed that androgynous names are often stable. Here, we examine those names that do have unstable sex-ratios: those that move from being predominantly given to boys, to predominantly girls, or vice-versa, or that make many such

\[ \text{correlation} = .925 \]
\[ \text{correlation} = .504 \]
\[ \text{correlation} = .941 \]
\[ \text{correlation} = .942 \]
\[ \text{correlation} = .657 \]
\[ \text{correlation} = .603 \]
\[ \text{correlation} = .900 \]
\[ \text{correlation} = .855 \]

Fig. 2. Top Androgynous Names. Note: correlations refer to year-to-year correlation in births for girls and boys. Positive correlations indicate that girl and boy births tend to rise and fall together for the name. These names are the four most popular androgynous names which were predominantly male and the most popular predominantly female androynous names (excluding those that are displayed in Fig. 3). Patterns are similar for other popular androynous names. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

\[ \text{Varying this threshold to include .01%, .05%, .1%, .2%, and .3% yields an average increased likelihood for being a top girls’ name of 3.53, and an average increased likelihood for being a top boys’ name of 1.97, if the name has reached the corresponding threshold for the other gender. We give further details in the appendix.} \]

\[ \text{5.3. Gender-Dynamic names} \]

In the previous sections we showed that androgynous names are often stable. Here, we examine those names that do have unstable sex-ratios: those that move from being predominantly given to boys, to predominantly girls, or vice-versa, or that make many such
switches. Following Instability’s bandwagon argument, the peaks of the popularity time series of these names should have two qualitative features. First, once the name is predominantly given to children of one sex, its growth in popularity for children of the other sex should stop. Second, the “displaced” sex should peak in popularity before it is replaced, and the “replacing” sex should peak in popularity after it replaces the other sex.

Before testing these hypotheses, we formalize what we mean by names that are “dynamic”: names moving or switching from being predominantly given to one sex, to predominantly given to the other. Because many names switch multiple times, it is necessary to define what a substantive, significant, or lasting “switch” is for these dynamic names. We define a meaningful switch as follows, involving two factors: 1) compared to the year in which the switch happens, in the prior three years there is either no switching of genders or the percent of both boys and girls given the name falls within the range of 45% and 55%, and 2) in the five years following the switch there is no further switching of genders. We believe this definition captures substantively-lengthy switchings of genders.

There are several factors we use to characterize the trajectories of dynamic names. We specify the names’ “beginninggender” (whichever sex is more common when the name first enters our data), when the names have a meaningful switch (before or after they peak in popularity), and whether the names peak in popularity together or separately for boys and girls. Together these conditions yield eight potential patterns that could appear in the data, and indeed we find all eight in ours, illustrated below in Fig. 4. Of the 195 names that switch at some point, only 23 (12%) follow the ideal-typical bandwagon pattern of one gender peaking, before declining, as the other gender gains popularity (ie, the “X” pattern). Most common are the 129 (66%) names where the name is gaining popularity for both genders, and both genders peak after one gender overtakes the other. We provide prototypical examples for each of the eight types of switching and peak relationships in Fig. 4 below.

In summary, we find little evidence of bandwagon effects. Bandwagon effects would yield a declining popularity of one gender, while the other gender rises, but we find the opposite in most androgynous names: the popularity of androgynous names for boys and girls generally rise and fall in tandem with one another, yielding a positive correlation in the time series of popularity with both sexes. Peaks in popularity, for both boys and girls, likewise occur close to one another, rather than spread out over time as we would expect from bandwagon effects. Furthermore, we do not find any threshold effects at 0.2%. Instead, although Instability claims that very rarely does a name’s popularity for both sexes reach this threshold, we find that it is, in fact, more likely for one sex to reach this threshold if

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Fig. 3. Androgynous Names Displayed in Instability. Note: correlations refer to year-to-year correlation in births for girls and boys. Positive correlations indicate that girl and boy births tend to rise and fall together for the name.

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13 We restrict this analysis to names given to at least 100 children in at least one year of their existence, as patterns in rare names tend to be very noisy and idiosyncratic.
the other sex has already attained it. Finally, more qualitative patterns in the time series of androgynous names do not conform to the typical signatures of bandwagon effects. We now turn to Instability’s arguments concerning the lifespans of androgynous names.

6. The lifespan of androgynous names

Instability argued that androgynous boys’ names fell out of usage faster than non-androgynous boys’ names, but androgynous girls’ names were potentially longer-lived than non-androgynous girls’ names (2000:1283). If androgynous names were unstable, we would expect them to be shorter-lived, at least as androgynous names, than their uni-sex counterparts. To analyze the lifespans of names we first describe Instability’s analysis and conceptual limitations in how they define androgyny, as well as the “birth” and “death” of names. We show that different, but reasonable, definitions of lifespans and androgyny produce radically different results. We then present our own analysis, showing that, for both boys and girls, names that are popular for one sex tend to have longer lifespans as names for the other sex. Put differently, names tend to remain in use for both girls and boys longer if they are popular with the other sex.

6.1. Problems with the birth, death, and lifespan definitions in instability

Modeling the “survival” of androgynous vs. non-androgynous names involves two key definitional decisions, which on close inspection have pernicious analytical consequences. The first decision is the definition of androgyny; what does it mean for a name to be androgynous? The second is the definition of birth and death; what defines when a name’s lifespan begins, and what determines when it ends? We identify two problems with the definitions used in Instability and show how these problems complicate the interpretation of Instability’s results.

In its survival analysis, Instability defined a name as androgynous if it is simultaneously among the 200 most popular names for both boys and girls in a given year. There are two problems with this definition of androgyny. First, because the rates at which parents give children the most popular names varies considerably over time (Lieberson and Lynn, 2003), holding n constant at 200 names yields a time-inconsistent definition: Fig. 5 below shows that, for our dataset, the top 200 names for boys represent anywhere from 1% to 21%

14 This difference was not statistically significant.
of the total unique boys’ names in the data; the top 200 girls’ names represent anywhere from 1% to 22% of the total unique girls’ names. Furthermore, the number of children given the 200 most popular names of a given year also varies considerably; depending on the year anywhere from 54% to 86% of boys born are given these boys’ names, and from 42% to 82% of girls born are given these girls’ names. Thus, this definition of androgyny means different things at different times.

The second problem with Instability’s definition of androgyny is that names can have dramatically different gender compositions when they “become” androgynous. Applying this definition to our own dataset would mean that when Pearl, for example, became androgynous in 1880, it was 9.8% male and 90.2% female, but when Taylor became androgynous in 1987, it was 58.8% male and 41.2% female. Moreover, this definition makes it easier for boys’ names to qualify as androgynous than girls’ names, since there are far fewer boys’ names in the dataset, compared to girls’ names; all else equal, predominantly boys’ names will be more likely to be defined as androgynous at some point than predominantly girls’ names.

Instability’s definition of birth and death also presents problems. Instability defines an androgynous name’s “birth” as the first year that the name is among the top 200 most popular names for both boys and girls. The “death” of an androgynous name is gender-specific, such that when the name drops out of the top 200 names for one sex for that year, the name has “died” only for that sex, and so
continues to “live” for the other sex as long as it remains in the list of top 200 names for that sex. This definition, however, biases the lifespan of androgynous names downward by subtracting any pre-androgynous, top 200 years from an androgynous name’s lifespan. As an example, consider the career of Dakota, shown below in Fig. 6. Although Dakota was a top 200 boys’ name from 1990 to 2006, it was a top 200 girls’ name in 2006 only. Therefore, by Instability’s definitions of birth and death, Dakota is only “alive” for one year (2006) as an androgynous name, since 2006 is its last year in the top 200 for boys and its only year in the top 200 for girls. If Dakota had not become androgynous in 2006, it would have had a 16-year lifespan as a top boys’ name. Everything else equal, by this definition, a name’s lifespan can only shrink if it becomes androgynous. Notice also that if the cutoff, in terms of the population required to be counted among the top 200 names, were the same for girls and boys, Dakota would never have been defined as androgynous, since its popularity for girls never reaches what the popularity was for boys when it entered the boys top 200 list.

These issues with defining androgyny, and the birth/death of names, are, however, not specific to Instability. Names are not inherently gendered, so androgyny can only be defined by usage. Specifically, androgyny refers to the relative popularity of a name for girls and boys. Lifespan, however, is also measured by how long a name meets some minimum popularity. Popularity is therefore necessarily part of the definition of both androgyny and survival, so it is difficult, and likely impossible, to define androgyny so that an analyst could compare the lifespans of androgynous and non-androgynous names in a principled way. For example, replacing the “top 200 names” with the minimum number of names needed to describe some percentage of the population leaves us with an inconsistent number of names over time, and is thus similarly unreliable. Another possibility would be to define androgynous names in a similar way to how they’ve been defined elsewhere in Instability: as being androgynous when the percentage of births by gender is less than 66% majority gender (2000:1263). This definition, however, also biases the lifespan of androgynous names downward since it would define many names as androgynous solely as a result of a decline in popularity for one gender. This introduces a reverse causality problem, because the name would be defined as androgynous because it is dying, rather than dying because it is androgynous.15

Below, we estimate mean lifespans of names based on different definitions of androgyny and birth/death. We display lifespans for names that entered the top 200 and top 1,000 most popular names, and the names making up the top decile of births. We show lifespans for androgynous names using both Instability’s definition of birth and death, as well as our own definition of birth and death, as follows: in our definition of birth and death, for each sex, a name is “born” for that sex the first time it reaches the popularity cutoff, and it “dies” after it no longer meets the popularity cutoff for that sex. Therefore, while our definition of death is the same as Instability, we have altered the definition of birth so as to not downwardly bias the average lifespan of names.

Table 1 below shows that for these different popularity cutoffs, and birth/death definitions, androgynous names have dramatically different mean lifespans. Two clear patterns are evident in Table 1. First, as expected, by our definition of birth and death, androgynous names have higher mean lifespans than by Instability’s definitions. Second, consistent with Instability, non-androgynous boys’ names have longer lifespans than non-androgynous girls’ names, regardless of the cutoff. Consistencies end here: depending on the choice of cutoff, androgynous names can have longer, shorter, or statistically indistinguishable mean lifespans compared to non-androgynous names.

6.2. Our survival analysis

We also conduct a survival analysis, asking if androgynous names are shorter lived than their unisex counterparts. The issues with the definitions of birth, death, and androgyny that we discuss above, however, also apply to formal survival analysis. Instead of attempting to impose a definition of androgyny here, we examine the effect of children of one sex being given a name on that name’s lifespan for the other sex. In other words, we look at how the number of girls being given a name affects the name’s lifespan as a boys’ name, and vice-versa.

Here, we define the “birth” of a name for each gender as occurring the first year it appeared in our data: the first year it was given to at least five children of that sex. We define the “death” of a name for each gender as occurring the year after its final appearance in our data (the final year it was given to at least 5 children of that sex).

We estimated discrete-time survival models16 via logistic regression to find the effects of the other gender being given the same

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15 Consider, for example, a hypothetical name that was consistently given to 100 girls per year. If the name was also given to 1000 boys, it is non-androgynous; but if it declines in popularity for boys to 100 per year, while remaining stable among girls, then it becomes androgynous simply as a byproduct of its decline among boys and its consistency among girls.

16 As a robustness check we re-ran these analyses using Cox proportional hazards models with substantively identical results.
name 1, 5, 15, and 25 years in the past.\textsuperscript{17} The results are shown in Table 2 below.

The likelihood that a name will exit for boys or girls does not increase because of the influence of girls or boys (respectively) being given the name in any of these models. In fact, the presence of boys or girls being given a name makes it less likely that the name will exit for the other sex. Thus, we find that androgynous names are generally longer-lived, or more specifically, names remain in use for one sex longer if they have been in use for the other sex.

7. Can taste explain androgyny or instability?

Our results above suggest that the kind of bandwagon effects posited by \textit{Instability} do not explain the androgyny of names, or lead to greater instability for such names. Although our findings are consistent with taste-based arguments to explain the androgyny of names, they do not provide positive evidence for a taste-based model. Taste-based explanations focus on the broader classes to which objects belong to explain their reception; therefore, here we show that androgynous names differ in their spelling and phonology from non-androgynous names, and that many instances of name instability appears to have resulted from a broader shift in the meaning of the names names’ phonological category (as defined by its suffix).

7.1. Androgynous suffixes

Names are put in gendered classes based on their suffixes. For instance, 98% of the names in our data that end in the schwa, or “uh”, sound (e.g. \textit{Sarah} or \textit{Hannah}) are girls’ names. Moreover, we note, as \textit{Instability} did, that there are commonalities among the suffixes of androgynous names. \textit{Instability} found that the long-e was the most common suffix among androgynous names, followed by \textit{n}, and \textit{l}. Similar to \textit{Instability}, our data show that nearly 70% of androgynous names\textsuperscript{18} have either a long-e or \textit{n} suffix; the \textit{schwa}, \textit{r}, and \textit{s} suffixes describe an additional 11%. Differences in suffixes between androgynous and non-androgynous names are more pronounced among the more popular names; in Table 3, we summarize the suffixes of the 1,000 most popular names according to whether they were androgynous or not. Hence, we show here how androgyny can be signaled through the name phonology—descriptive evidence that people use phonological categories to determine androgyny.

7.2. The gender dynamics of the long e suffix and switching names

Names which switch genders entirely, and particularly those names that shift from boys’ to girls’ names, ought to exemplify the

\begin{table}
\centering
\caption{Discrete Time Survival Analyses.}
\begin{tabular}{llll}
\hline
Outcome & IV (logged) & Coefficient & Name-years & Total Names \\
\hline
Boy’s Name Exiting Girls Given the Name, 1-year lag & & $-0.431^{***}$ & 897,882 & 35,926 \\
Boy’s Name Exiting Girls Given the Name, 5-year lag & & $-0.304^{***}$ & 851,092 & 26,520 \\
Boy’s Name Exiting Girls Given the Name, 15-year lag & & $-0.174^{***}$ & 702,168 & 19,728 \\
Boy’s Name Exiting Girls Given the Name, 25-year lag & & $-0.074^{***}$ & 565,826 & 14,858 \\
Girl’s Name Exiting Boys Given the Name, 1-year lag & & $-0.449^{***}$ & 1246,541 & 60,815 \\
Girl’s Name Exiting Boys Given the Name, 5-year lag & & $-0.348^{***}$ & 1167,520 & 43,775 \\
Girl’s Name Exiting Boys Given the Name, 15-year lag & & $-0.285^{***}$ & 926,047 & 31,459 \\
Girl’s Name Exiting Boys Given the Name, 25-year lag & & $-0.233^{***}$ & 715,207 & 22,197 \\
\hline
\end{tabular}
\end{table}

\begin{table}
\centering
\caption{Suffixes of the 1000 Most Popular Names.}
\begin{tabular}{lrr}
\hline
\% ending with: & Never Androgynous (\textit{n} = 826) & Ever Androgynous (\textit{n} = 174) \\
\hline
Schwa & 24.8\% & 5.2\% \\
Long-E & 17.4\% & 44.8\% \\
(\textit{n}except een) & 14.8\% & 24.7\% \\
R & 4.7\% & 3.4\% \\
S & 4.0\% & 2.3\% \\
D & 3.5\% & 0.6\% \\
T & 3.1\% & 1.7\% \\
L & 1.0\% & 0.6\% \\
\textbf{Total:} & \textbf{78.6\%} & \textbf{88.5\%} \\
\hline
\end{tabular}
\end{table}

\textsuperscript{17} We estimated each time lag in a separate model. We do not include multiple lags in the same model since multiple lags are difficult to interpret, and we are not interested in the effect of one lag conditional on another lag.

\textsuperscript{18} Here, androgynous names were defined as names that were given to at least 100 children in at least one year, and that were less than 80% majority gender at least one year of their lifespan.
contagion model. Here we ask whether taste can also explain the dynamics of such names. We show that names which switch from boys’ to girls’ disproportionately have a long-e suffix (e.g., Ashley or Courtney), and that evidently a shift in the gender connotations of the long-e suffix made these names appear more suitable to parents of girls. Therefore the dynamics of these names is consistent with a taste model wherein the gendered meaning of a larger class of names was changing, and this in turn caused changes in the usage of individual names, as opposed to name-specific contagion effects.

Fig. 7 shows how a shift in the gender meaning of the long-e suffix occurred. Around the 1950s parents began to create many more new long-e names for girls, but the rate for boys names lags much further behind. There were 870 new long-e girls’ names created between 1930 and 1970, which were given to ten or more children per year and which were never androgynous, while only 138 new long-e boys’ names were created during this time. In other words, there were over 6-times as many new long-e girls’ names created from 1930 to 1970 than long-e boys’ names. Many of these names for girls became quite popular, including names such as Tiffany and Brittany. The popularity of boys’ long-e names in total births also peaks around the 1950s, as the popularity for girls experiences a significant resurgence, mostly as a result of girls being given newly created long-e names.

To illustrate how the changing gender connotations of the long-e suffix affected existing names we also considernames that “switch” genders. We define these as: names given to more than 100 children at least once that were once androgynous (below 80% majority sex), that later reach 80% majority sex, and do not dip below 80% majority sex for 25 years thereafter. By this definition there are 57 names that switch from boys’ to girls’ names, and about half of these names (26) have a long-e suffix, as opposed to less than a fifth of the non-switching gendered names in the top 1,000. In particular, during the period when the long-e suffix was becoming used more often for new girls’ names, many long-e boy names switched to being predominantly given to girls. These include names such as Christy (1944), Shelly (1948), Hillary (1955), Sandy (1955), and Kelly (1961). The vast majority of these names switch post-1950 when the proportion of girls given the long-e suffix was rising. Only three of these names switch before 1950, while 23 switch after 1950. By contrast, there are only five long-e, dominant-girl names that ever switch to being boys’ names, two of which were nicknames, and the other three of very limited popularity (these were Donnie, Ronnie, Rami, Ozzie, and Audie). Consistent with a taste-based explanation, many of the names which switched genders did so while the gender meaning of their larger class of names was shifting.

8. Conclusion: the stability of androgynous names

Are androgynous names unstable? Our analyses suggest not. Rather than one gender driving out another gender, as in the bandwagon model proposed in Instability, for most androgynous names their popularity of for for both male and female children rises and falls together. Furthermore, we do not find that one sex being given a name decreases the lifespan of the name for the other sex. Instead, names tend to remain in usage longer for one sex if they are also used for the other. Androgynous names are rare, but they are not simply transitioning from one single-gendered steady-state to another. Rather, the gender of names is not always as binary as Instability argued.

The stability of androgynous names is consistent with a taste-based explanation, where parents judge names as part of larger classes with similar spelling or phonology. As Lieberson and colleagues first showed, most names are unambiguously gendered through the spelling and phonology of their suffix (Lieberson and Bell, 1992), but androgynous names disproportionately have ambiguously gendered suffixes. Specifically, the vast majority of androgynous names end with a long-e sound or the letter n, l or r. Moreover, we show that many of the most dramatically unstable names—names which “switched” genders—were part of a larger shift in the gender connotations of the long-e suffix.
Overall we show that contagion type models are a poor fit for explaining the dynamics of androgynous names, and we show that some instability in the gender of specific names can be explained by a shift in the gender-meaning of their phonology, as in the case of the long-e suffix. This leaves much about androgynous names unexplained, however, some of which could be name-specific. Androgynous names, for instance, may arise from parents having a preference for androgyny, either because they choose the name before the sex of the child is known, or because they wish their child to have an ungendered name. Or perhaps, for some names, popularity bandwagons occur that are largely independent of gender. Moreover, it is possible that some contagion effects exist, but are not strong enough to determine the dynamics. Recent work has shown that, for instance, in many experiments social influence alone is not strong enough to lock-in an "inferior" alternative (van de Rijt, 2019), and therefore even if some bandwagoning is occurring, its effects may be limited. There is also likely a gender bandwagon effect for non-androgynous names. It is likely, for instance, that immigrants, who tend to choose common and traditional American baby names (Gerhards and Hans, 2009), choose names which have long-established gendered usage. Bandwagoning for established names, however, casts further doubt on the idea that parents would choose an androgynous name in the hopes that its gender would tip towards the sex of their child: if parents wish to choose a name based on the sex-ratio of children who bear, or will bear, the name, then there are tens of thousands of highly gendered names to choose from.

We posed the broader question of how people assign meaning to cultural objects. Much of the work in the sociology of culture takes an object-specific approach, and argues that the meaning of an object emerges as it is adopted by different types of people (e.g. DellaPosta et al., 2015). In these models, the meaning of an object is not settled until it is “locked in” through self-reinforcing endogenous processes (Shaw, 2015). Here we show, for the gender-meaning of baby names, the evidence leans towards a model where people assign meaning to cultural objects based on how their properties assign them to certain classes. In other words, we support a view of the diffusion of cultural objects based on tastes that allow group members to independently judge new cultural objects based on existing esthetic rules (Cerulo, 2018; Lieberson and Mikelson, 1995; Wohl, 2015).

Acknowledgements

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Appendix 1. Racial and Ethnic Differences in Name Androgyny

Here we use data from the New York Department of Public Health that includes the race of the mother, to investigate how racial differences in naming might influence our analyses of androgyny. Of all 12,187 names given to children in NY from 2001 to 2012, only 796 are androgynous (6.53%). Beyond those years specifically, a total of 2216 of these names were ever androgynous (18.18%). These percentages are similar for each racial group, as seen in Table A1.

Additionally, from the correlation matrix presented in Table A2, we see that the popularity of names between races is highly correlated (the lowest correlation is between Black and Asian births at 0.59). Nowhere do we find negative correlations that, if present, would suggest there are inverse relationships for naming patterns between racial groups. Instead parents are more likely to give their children names that have been given to children of other racial groups. Finally, from the logistic regressions of Table A3, we did not find any significant effect of racial group on the likelihood of a name being androgynous; none of the racial groups yield significant coefficients. Altogether we find that naming choices by racial group are not as variable as one might expect.

<table>
<thead>
<tr>
<th>Race</th>
<th>Number of Names</th>
<th>Percent Androgynous from 2001–2012</th>
<th>Percent Androgynous from 1880–2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>1483</td>
<td>4.1%</td>
<td>11.8%</td>
</tr>
<tr>
<td>Black</td>
<td>2796</td>
<td>8.2%</td>
<td>21.3%</td>
</tr>
<tr>
<td>Asian</td>
<td>1770</td>
<td>7.3%</td>
<td>18.3%</td>
</tr>
<tr>
<td>Other</td>
<td>2492</td>
<td>4%</td>
<td>12.4%</td>
</tr>
<tr>
<td>Unknown</td>
<td>287</td>
<td>8.4%</td>
<td>17.8%</td>
</tr>
</tbody>
</table>

Note: name statistics here are from the Social Security data, but names are raced by whether they were above one standard deviation higher than the median in the percentage given of that race in the New York public health data.

<table>
<thead>
<tr>
<th>Race</th>
<th>White</th>
<th>Black</th>
<th>Asian</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>1</td>
<td>1</td>
<td>.75</td>
<td>.85</td>
</tr>
<tr>
<td>Black</td>
<td>.7</td>
<td>1</td>
<td>.59</td>
<td>.78</td>
</tr>
<tr>
<td>Asian</td>
<td>.75</td>
<td>.59</td>
<td>1</td>
<td>.72</td>
</tr>
<tr>
<td>Other</td>
<td>.85</td>
<td>.78</td>
<td>.72</td>
<td>1</td>
</tr>
</tbody>
</table>
Appendix 2. Robustness to Varying Threshold Specifications

Here we detail the results of varying the threshold of interest for delineating popular names. We follow Instability in examining the 0.2% threshold, and find that varying this threshold from 0.01% to 0.3% yields little substantive difference in our findings. Columns 2–3 of Table A4 refer to instances where the popularity of a name with either sex reaches the threshold, rather than both. These tables show how our findings are robust to different specifications of popularity thresholds.

The thresholds we present below span a wide range of possibilities. For the highest threshold, very few names qualify, while the lowest threshold encompasses names given to the vast majority of the children in our data. More specifically, looking at the lowest threshold, 0.01%, we find 414 androgynous names where either sex reaches the threshold. This comprises just under 7% of all androgynous names, which are given to nearly 8% of all children born. In contrast, looking at the same 0.01% threshold in Table A5, we find 1567 non-androgynous boys' names and 2662 non-androgynous girls' names, comprising 5% and 4.64% of boys' and girls' names, respectively, which are given to nearly 43% of boys born and 38% of girls born. In other words, while the androgynous and non-androgynous names that reach the top 0.01% threshold describe only 4.83% of all names in our database, these names are given to just over 89% of all children. The most lenient threshold (0.01%) describes the names given to the vast majority of children in our data.

Additionally, we routinely limit analyses to names that are ever given to more than 100 children, because below this threshold there is often far too much missingness to draw stable conclusions. This is largely because names that are never given to at least 100 children in a year often have long stretches where they are around the 5-birth cutoff for inclusion in the social security data, and hence many of those years are recorded as missing. To illustrate this issue, we calculate the average percent of years that are missing for names between the first and last year they appear in the data. For names ever given to more than 100 children in a year, the average percent of inactive years is roughly 9%. In contrast, for names that are never given to more than 100 children in a year, the average percent of inactive years is roughly 31%. Finally, we note that even the names included among those given to more than 100 children in a year are those we may perceive to be quite rare, such as Emerie, Faigy, Lelia, Millicent, Cordal, and Porscha.

Table A4
Number of Androgynous Names Achieving Varying Percent-Thresholds, with Peak Year Correlations and Percent Born Correlations.

<table>
<thead>
<tr>
<th>Threshold</th>
<th>Either Sex Reaches (Both Sexes Reach)</th>
<th>Percent of Androgynous Names</th>
<th>Percent of Children Given These Names</th>
<th>Peak Year Correlations (Boys and Girls)</th>
<th>Percent Born Correlations (Boys and Girls)</th>
</tr>
</thead>
<tbody>
<tr>
<td>.01%</td>
<td>414 (205)</td>
<td>6.86%</td>
<td>7.87%</td>
<td>.7</td>
<td>.3</td>
</tr>
<tr>
<td>.05%</td>
<td>113 (56)</td>
<td>1.87%</td>
<td>4.72%</td>
<td>.82</td>
<td>.29</td>
</tr>
<tr>
<td>.1%</td>
<td>67 (23)</td>
<td>1.11%</td>
<td>3.71%</td>
<td>.94</td>
<td>.41</td>
</tr>
<tr>
<td>.2%</td>
<td>39 (7)</td>
<td>0.65%</td>
<td>2.81%</td>
<td>.91</td>
<td>.42</td>
</tr>
<tr>
<td>.3%</td>
<td>20 (3)</td>
<td>0.33%</td>
<td>2.01%</td>
<td>.9</td>
<td>.38</td>
</tr>
</tbody>
</table>

Table A5
Number of Non-Androgynous Names Achieving Varying Percent-Thresholds, with Percent of Children Given those Names, Across All Years.

<table>
<thead>
<tr>
<th>Threshold</th>
<th>Boys' Names Number of Names</th>
<th>Percent of Boys' Names</th>
<th>Percent of Children Given these Names</th>
<th>Girls' Names Number of Names</th>
<th>Percent of Girls' Names</th>
<th>Percent of Children Given these Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>.01%</td>
<td>1567</td>
<td>5%</td>
<td>42.8%</td>
<td>2662</td>
<td>4.6%</td>
<td>38.4%</td>
</tr>
<tr>
<td>.05%</td>
<td>613</td>
<td>2%</td>
<td>40.8%</td>
<td>865</td>
<td>1.5%</td>
<td>34.9%</td>
</tr>
<tr>
<td>.1%</td>
<td>411</td>
<td>1.3%</td>
<td>38.9%</td>
<td>563</td>
<td>1%</td>
<td>32.8%</td>
</tr>
<tr>
<td>.2%</td>
<td>273</td>
<td>0.9%</td>
<td>36.4%</td>
<td>356</td>
<td>0.6%</td>
<td>29.7%</td>
</tr>
<tr>
<td>.3%</td>
<td>201</td>
<td>0.6%</td>
<td>34%</td>
<td>277</td>
<td>0.5%</td>
<td>27.5%</td>
</tr>
</tbody>
</table>
References


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