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From ugly duckling to swan? Japanese and American beliefs about the stability and origins of traits

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Abstract

Two studies compared the development of beliefs about the stability and origins of physical and psychological traits in Japan and the United States in three age groups: 5–6-year-olds, 8–10-year-olds, and college students. The youngest children in both cultures were the most optimistic about negative traits changing in a positive direction over development and being maintained over the aging period. The belief that individual differences in traits are inborn increased with age, and in all age groups, this belief was related to predictions of greater trait stability. In both cultures, all ages believed positive traits would be maintained over development. In addition to developmental similarities across cultures, cultural variations, consistent with the hypothesis that interdependent cultures have a more incremental view of traits, were present. Japanese participants were more optimistic than American participants about negative traits changing towards the positive and were more likely to attribute differences in trait expression to effort.

Keywords

Social cognition; Cross-cultural; Person perception; Traits; Essentialism

Traits, or consistent characteristics that distinguish one person from another, are central to how Westerners think about other people and themselves. In the West, traits help guide adults' and children's expectations about other people's behavior and social interactions (Heyman & Gelman, 1999). Even at a young age, Westerners are quite sensitive to differences in trait expression; that is, that some individuals are smarter, taller, and kinder than others (Butler, 1998). Despite this early interest in trait differences, little attention has been paid to children's beliefs about the origins and stability of traits over development. For example, do children believe a person's present state predicts her mature end state, or do they believe a person's childhood traits can change radically over development, such that the least intelligent, most unattractive child can become the most intelligent, attractive adult?

Since one of the most dramatic constancies of development is change, children might well expect individual characteristics to change. Even preschoolers realize that the development of living things differs from that of artifacts (Rosengren, Gelman, Kalish, & McCormick, 1991). By age 5 children understand that some animals can undergo quite dramatic surface transformations over development, such as changing from a caterpillar to a butterfly, and still maintain identity (Rosengren et al., 1991). Although not as extreme as a caterpillar, humans

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also change physically over development as well as acquiring more knowledge and skills. Amid the changes that occur in development, however, some things can remain the same, either relatively or absolutely. A person might gain more knowledge with age, but never become really smart; and, try as she might, a person will never be able to fly simply by flapping her arms. Thus, we may view some characteristics as likely to change over development, while perceiving others as essential, that is, as being part of the person's underlying nature and therefore more stable over time.

Common patterns of development for all humans may produce universally shared beliefs about which human traits remain stable or change over development. Above and beyond these shared beliefs, specific cultures may also influence views of origins, constancy, and change. This article explores beliefs about the stability and origins of physical and psychological traits across two cultures that repeatedly have been shown to differ in their views of self and others: Japan and the United States. We suggest that there are both common developmental patterns in beliefs about the stability and origins of traits as well as different ways in which these patterns become instantiated in each culture.

Although scholars continue to debate whether traits actually do change over development (Caspi & Roberts, 2001; Srivastava, John, Gosling, & Potter, 2003), the focus of this paper is on *beliefs* about trait origins and stability. Beliefs about trait stability are not necessarily the same as beliefs about trait malleability. Intelligence might be seen as changeable in principle, but as normally tending to remain constant over development and hence stable. We might believe that an obese teenager is likely to become an obese adult, not because it is impossible to lose weight, but because it is so difficult to sustain the effort needed to keep weight off over time. The issue, then, is not whether traits actually do change or if children believe a change is possible, but rather, if children believe characteristics are likely to change over development.

Beliefs about trait stability are important because of their links to motivation and social behavior. A person who endorses trait stability, that is, an entity view of traits, is more likely to give up in the face of failure, succumb to feelings of helplessness, and to make negative self-attributions than someone who has an incremental perspective of traits and believes they can change (Dweck & Leggett, 1988; Heyman & Dweck, 1998). Even as early as pre-school, 3- and 4-year-olds who endorse beliefs of socio-moral stability are less likely to engage in pro-social behavior and are more accepting of aggressive behavior in peer interactions (Giles & Heyman, 2003). An entity view of traits may arise from essentialist reasoning. In searching for causal mechanisms to explain similarities within categorical groups, young children have a bias to attribute stable surface properties to fixed, underlying essences (Gelman, 2003). Although children exhibit essentialist reasoning about kinds, such as race and gender, questions remain about the extent to which they essentialize individual traits, such as shyness and coordination.

1. American children's optimistic beliefs about trait stability

In the United States, young children show a positivity bias in making trait attributions about others (Boseovski & Lee, 2006) and are more likely than older children and adults to be optimistic in their beliefs about trait stability (Droege & Stipek, 1993; Lockhart, Chang, & Story, 2002). Young children tend to believe that undesirable traits will change in an extreme positive direction over development (Lockhart et al., 2002). Young children's optimism for negative trait change does not simply result from a global response bias for endorsing all kinds of change since they perceive physical characteristics as more stable than psychological traits and they believe positive traits will remain stable (Heyman & Giles, 2004; Lockhart et al., 2002). Young children therefore appear not simply to be incremental theorists but optimists (Lockhart et al., 2002). In contrast to young children's naïve optimism about human

characteristics, US adults are more likely to have an entity, or essentialist, view of traits, believing that present states, both positive and negative, are the best predictors of future ones (Lockhart et al., 2002).

2. Commonalities and variations across cultures

Early optimism for trait stability may extend well beyond American society, as there are striking uniformities in how young children think about others across very different cultures. Young Hindu and American children, for example, describe personalities in similar ways, diverging only with increasing age, as Americans begin to make more dispositional inferences (Miller, 1986, 1987). Young children everywhere may share an initial common framework for folk psychology that emerges not only from early life experiences that are more similar across cultures than later ones but also from shared underlying cognitive constraints, such as similar trajectories in the early development of theory of mind (Callaghan et al., 2005; Wellman, 1998). Although young children perceive traits as having causal potency (Heyman & Gelman, 1999), a more sophisticated model of traits as internal, consistent, and sometimes involuntary causes of behavior may not develop until middle childhood. As a result, young children across cultures may be optimistic about trait stability as they overestimate the intentional control people have over behavior and underestimate the impact of innate potential or other more involuntary dispositional properties (Kalish, 2002).

Commonalities in early beliefs about trait stability might also be expected across cultures given the functional value of youthful optimism. Optimistic beliefs about trait stability would encourage perseverance at a time when all children have numerous, and often difficult, skills to learn (Bjorklund & Green, 1992). Such beliefs might therefore be reinforced because of their motivational benefits.

A common underlying framework certainly does not preclude the possibility of there also being early cultural variations in beliefs about trait stability. Cultural ideologies and beliefs are transmitted daily to children by their parents beginning at birth (Greenfield, Keller, Fuligni, & Maynard, 2003; Rothbaum, Pott, Azuma, Miyake, & Weisz, 2000). While folk psychologies may have some common elements, based on universals in understanding of mind and on similarities existing among all peoples, other elements of folk psychology, which are more optional, such as self-enhancing motivational factors, may vary across cultures (Heine, 2001; Lillard, 1998, 1999). Although all peoples commonly attribute behaviors to dispositions, members of interdependent cultures are generally more sensitive to situational factors as determinants of behavior than individualistic cultures (Choi, Nisbett, & Norenzayan, 1999; Heine, 2001). Thus, young Chinese children are less likely than young American children to describe themselves in terms of dispositions and traits and more likely to refer to social roles (Wang, 2004). Such cultural differences might become more pronounced with age as children's early frameworks evolve in response to a specific culture's variations on general principles of folk psychology (Miller, 1986, 1987).

3. Japan and the United States: incremental vs. entity views of trait stability

This study compares Japanese and American cultures, which are commonly characterized as having divergent views of the self and others (Heine, 2005; Markus & Kitayama, 1991). The US is often described as an individualistic culture in which independence and personal achievement are prized. People are viewed as autonomous, self-contained beings whose behavior is primarily determined by their unique internal attributes (Markus & Kitayama, 1991). One tries to change the environment to fit the needs of the individual who is perceived as a stable entity (Heine, 2001). Japan, in contrast, is portrayed as a culture in which the construal of the self and others is more interdependent and sensitive to the social context (Heine, 2001; Markus & Kitayama, 1991). Social harmony is emphasized. Individuals are

expected to adapt to the social norms of a particular group and the potential for change in the individual in response to different situations is therefore highlighted (Heine et al., 2001).[1]

Because of a greater focus on situational demands as determinants of behavior, Japanese may embrace a more incremental view of traits in which characteristics of people are perceived as more flexible and capable of being altered with effort (Choi et al., 1999; Dweck & Leggett, 1988; Markus & Kitayama, 1991). Consistent with this view, effort is highly valued in Japan and traits such as academic prowess are often viewed as the result of effort more than innate ability (Heine, 2001; Sato, Namiki, Ando, & Hatano, 2004).

Americans, on the other hand, may possess an entity view of traits, in which people are viewed as more bounded, stable, and unique (Choi et al., 1999). Differences in behavior are perceived as being determined by inborn, fixed dispositions, or underlying essences. Consistent with this view of traits, American mothers are more likely than Japanese mothers to attribute children's failures to a lack of ability and are more likely to attribute a smaller percentage of intelligence to effort (Heine, 2005; Hess et al., 1986; Holloway, 1988).

4. The present studies

Study 1 examines the development of beliefs about the stability of traits in Japan and the US. Study 2 asks if the developmental patterns found extend to beliefs about the origins of traits. The youngest age group, 5- and 6-year-olds, is an age at which most children can reliably use traits to make inferences about behavior (Heyman & Gelman, 2000; Yuill, 1997) and also the age at which children can engage in episodic future thinking (Atance & O'Neill, 2005). Eight to 10 year old children were included since this age group often shows a dramatic growth in the trait understanding (Yuill, 1993). Finally, because significant increases in beliefs about trait stability occur after childhood (Lockhart et al., 2002) and because the interdependent–individualistic distinction has primarily been shown in older participants, adults were a necessary end point.

As suggested above, a common overarching developmental pattern in reasoning about trait stability should emerge in both the US and Japan. We expect the youngest children in both cultures to be most optimistic about trait stability over development. This optimism should decrease in older age groups as they develop a more sophisticated understanding of differences in trait expression. In addition to this common developmental pattern, we hypothesize that Japanese participants at all ages will possess a more optimistic view of trait stability than Americans due to a more situational, incremental view of traits. Consistent with this view, Japanese participants will be more likely than American participants to endorse effort as an important factor in the origins and modification of traits.

5. Study 1

5.1. Method

5.1.1. Participants—Americans: fifty-four 5–6-year-old children (M = 5.11 years, 29 females), thirty-three 8–10-year-old children (M = 9.4, 16 females), and thirty-six college-aged

[1]The individualistic–interdependent distinction of course lies on a continuum and is context sensitive. For example, Japanese act more interdependently when interacting with in-group members rather than with strangers (Heine, Lehman, Peng, & Greenholtz, 2002). Moreover, the individualistic–interdependent distinction is not always found when comparing present day Americans and Japanese on attitudinal surveys (Matsumoto, 1999; Oyserman, Coon, & Kemmelmeier, 2002; see Greenfield et al., 2003; Heine et al., 2002; Kitayama, 2002 for further discussion of these results). Still, variationsin the socio-cognitive reasoning of adults from Japan and the US are consistently present when examined in studies measuring “on line responses” (Heine et al., 2002; Kitayama, 2002; Nisbett, 2003). In short, in studies that extend beyond attitudinal and value surveys, the individualistic/interdependent dichotomy offers a valuable interpretative framework, a framework that is centrally relevant to views of trait stability.

adults (17 females) participated in the study. The children were recruited from a public elementary school in Connecticut. The adults were students at a US university.

Japanese: forty-eight 5–6-year-old children (*M* = 5.11, 24 females), twenty-four 8–10-year-old children (*M* = 9.10, 12 females), and twenty-four college-aged adults (12 females) participated. The children were from a private kindergarten and a public elementary school in Niigata City. The adults were students at a Japanese university.

5.1.2. Stimuli—Eight short stories contained a main character with a trait that s/he wanted changed. In all but one case (eye color which is uniform among Japanese participants), the traits were ones that previously had been judged by adults as less desirable than their opposites. In this paper, for ease of exposition, undesirable traits will be referred to as negative traits and desirable traits will be referred to as positive traits.

5.1.2.1. Types of traits: The traits were classified into three categories: psychological traits (poor learner, unkind), physical traits (poor vision, slow runner, short stature, missing a finger), and control items (not being able to float in the air, dark eye color). The control traits checked for response biases, such as saying that everything could dramatically change.

5.1.2.2. Stories: In each of the eight stories, the undesirable trait was present when the main character was both 5 and 10 years old, suggesting an enduring quality, not a temporary state. The gender and names of the protagonists matched the gender and culture of the participant. The stories were modeled after those previously used with US participants (Lockhart et al., 2002). Native Japanese speakers who were bilingual in English initially developed the stories for use with a Japanese population and they were then translated into English for use with US children.

The main character was described as wanting the negative trait to change in a desired direction. The character was then described at 21 years of age, and the participant was asked what the most likely outcome would be for that character. Participants were told that the character had never had an operation and that s/he did not take medicine on a regular basis. This instruction controlled for changes that might occur through medical interventions and that can be seen by even fourth graders as changing essences, such as taking a pill or growth hormones (Keil, 1989). Finally, the character was described as getting much, much older – 80 years old – and the participant was again asked what the most likely outcome would be. This final question assessed the long-term stability of changes taking place during the developing period (10 to 21 years) (see Appendix A).

5.1.3. Procedure—Each participant was told the eight different stories in a random order. In predicting what would be the “most likely” outcome of the character's trait at 21 years and at 80 years, participants selected their answers from three randomly presented choices (see Appendix A): (1) the person would exhibit the extreme negative trait; (2) the person would be like most people of that age group and exhibit an average expression of the trait; or (3) the person would show the extreme positive expression of the trait. Participants were always asked to justify their responses. Culture appropriate drawings depicting the protagonist and age-matched peers accompanied each story and the three outcomes. Each child was interviewed individually in a quiet room for 20–40 min. Adult participants received the stories in a questionnaire format as a group.

5.1.4. Scoring

5.1.4.1. Responses to the stories: A score of “1” was assigned to extreme negative choices, “2” to average choices, and “3” to extreme positive choices. The scores were summed and

divided by the number of traits in each category to produce a mean category score ranging from 1 (stable) to 3 (extreme positive change). For each participant, an overall mean score (using the means for physical and psychological traits) for the 21-year-old protagonist was subtracted from an overall mean score for the 80-year-old protagonist in order to produce a mean difference score, which was used to assess changes during the aging period (21–80 years).

5.1.4.2. Justifications for responses to stories: Responses were first coded as to whether a change was predicted for the 21-year-old and whether a positive change or maintenance at extreme positive trait expression was predicted for the 80-year-old. When positive changes or maintenance of extreme positive changes were predicted, justifications were judged to fall into one of the following categories: (1) *biological/physical* (e.g., She ate lots of protein and her bones grew); (2) *effort/practice* (e.g., He worked hard and exercised a lot); (3) *increased age/maturation* (e.g., He got older and people usually get a lot nicer as they get older); (4) *wish/desire* (e.g., He wanted to); (5) *learning* (e.g., She learned how to run faster); (6) *other responses*, which contained low frequency responses that did not fit into the above categories; and (7) *miscellaneous*, including very personalized responses and reiterations of change. Two pairs of judges in each culture independently scored the responses. Agreement was 94% (754/799) for American judges and 88% (649/736) for Japanese judges. Disagreements were resolved by discussion.

5.2. Results

5.2.1. Trait stability—Table 1 shows the overall mean scores for judgments about stability for negative traits by age group and by culture for both the developing (21-year-old protagonist) and aging periods (80-year-old protagonist).

5.2.1.1. Developmental patterns: Repeated measures ANOVAs with culture and age as between-subjects variables and mean scores for psychological/physical traits as a within-subjects variable revealed significant main effects of age. Significant age differences for predictions of trait stability were found for both the 21-year-old ($F(2, 213) = 32.94$, $p < 0.001$, $\eta_p^2=0.236$) and 80-year-old protagonists ($F(2, 213) = 21.00$, $p < 0.001$, $\eta_p^2=0.165$), with large effect sizes. As expected, the youngest children in both cultures were the most optimistic that negative psychological and physical traits would change towards the positive during the developing period (5–6, $M = 2.23$; S.E. = 0.041 > 8–10, $M = 1.94$; S.E. = 0.056 > Adults, $M = 1.63$; S.D. = 0.055, LSD, $p < 0.01$) and that these traits would continue to show positive expression during the aging period (5–6, $M = 2.26$; S.E. = 0.043 > 8–10, $M = 2.05$, S.E. = 0.058 > Adults, $M = 1.75$; S.E. = 0.057, LSD, $p < 0.01$).

5.2.1.2. Cultural differences: Cultural differences in beliefs about psychological/physical trait stability were significant for both the developing ($F(1, 213) = 9.81$, $p < 0.01$, $\eta_p^2=0.044$) and aging periods ($F(1, 213) = 13.96$, $p < 0.001$, $\eta_p^2=0.062$), although the effect sizes were moderate. Interactions of culture × age were also significant (*Developing*: $F(2, 213) = 7.02$, $\eta_p^2=0.062$; *Aging*: $F(2, 213) = 6.68$, $\eta_p^2=0.059$, all $p < 0.01$). Subsequent analyses revealed that Japanese adults were significantly more likely than US adults to believe traits would change over the developing period (Jpn adult, $M = 1.92$, S.E. = 0.085 > US adult, $M = 1.44$, S.E. = 0.070, LSD, $p < 0.05$) and continue to be positive in the aging period (Jpn adult, $M = 2.05$, S.E. = 0.072 > US adult, $M = 1.56$, S.E. = 0.088, LSD, $p < 0.05$). Japanese 8–10-year-olds were overall more optimistic than US 8–10-year-olds about desired psychological/physical traits being expressed in the 80-year-old protagonist (Jpn 8–10, $M = 2.17$, S.E. = 0.088 > US 8–10, $M = 1.96$, S.E. = 0.075, LSD, $p < 0.05$). Other differences between Japanese and American children were not significant.

5.2.1.3. Trait differences: In order to explore differences between the control, physical, and psychological traits, repeated measures ANOVAs with culture and age as between-subjects variables and physical/psychological/control traits as a within-subjects variable were conducted. Significant trait differences were found for both the developing ($F(2, 426) = 344.08$, $p < 0.001$, $\eta_p^2 = 0.618$, $p < 0.001$) and aging periods ($F(2, 426) = 333.03$, $p < 0.001$, $\eta_p^2 = 0.610$), with large effect sizes. As shown in Table 1, participants perceived control traits as the least likely to change in the desired direction and psychological traits as the most likely to change in the desired direction. These same significant differences between trait types (*Control* < *Physical* < *Psychological*) were found within each age and cultural group (*M*s and S.D.s in Table 1, LSD, all $p < 0.03$). There was a significant trait × age interaction for both the developing ($F(4, 426) = 4.01$, $p < 0.01$, $\eta_p^2 = 0.036$) and aging periods ($F(4, 426) = 6.87$, $p < 0.001$, $\eta_p^2 = 0.061$). Eight to 10-year-old children were more optimistic than the adults about psychological trait expression but did not differ from adults in their beliefs about the control traits (*M*s and S.D.s in Table 1, LSD, all $p < 0.05$). No other significant differences were found.

5.2.1.4. Changes in trait expression from 21 to 80 years: Overall, participants believed traits would be more positively expressed at age 80 than at age 21 (mean difference = 0.076; S.D. = 0.365, $t(218) = 3.10$, $p < 0.01$). For all three age and cultural groups, the mean difference scores for changes in psychological/physical trait expression from age 21 to age 80 were positive (*Jpn*: 5–6, $M = 0.04$, S.D. = 0.46; 8–10, $M = 0.17$, S.D. = 0.33; Adult, $M = 0.13$, S.D. = 0.34; *US*: 5–6, $M = 0.02$, S.D. = 0.41; 8–10, $M = 0.07$, S.D. = 0.30; Adult, $M = 0.11$, S.D. = 0.22). Analysis of variance revealed no significant age or cultural differences and no significant interactions (all $p > 0.18$).

5.2.2. Justifications for change responses—The youngest Japanese children gave more miscellaneous (e.g., "don't know") justifications for changes (5–6 *Jpn* vs. *US*: 53% vs. 25%, $z = 8.75$, $p < 0.01$). The percentages for each type of non-miscellaneous justification are shown in Table 2 for each age and cultural group.

5.2.2.1. Developmental patterns: Five- and 6-year-old participants in both cultures were more likely than older participants to attribute changes to maturation (54% vs. 25%, $z = 9.67$, $p < 0.01$). Effort attributions for change increased with age ($\chi^2(2, n = 1124) = 62.12$, $p < 0.001$), as the percentage of maturation justifications decreased ($\chi^2(2, n = 1124) = 102.27$, $p < 0.001$). Although their effort and learning attributions were less frequent, 5–6-year-olds were more likely to make such attributions for changes in psychological traits than for changes in physical and control traits (74% vs. 26%, $\chi^2(1, n = 86) = 10.49$, $p < 0.01$).

5.2.2.2. Cultural differences: Chi-square analysis revealed few significant differences between Japanese and American children in their justifications for change. As expected, Japanese adults were more likely to attribute changes to effort than American adults (33% vs. 17%, $z = 3.06$, $p < 0.05$).

5.3. Summary of Study 1

The developmental commonalities in trait judgments across the two cultures were striking. Indeed, age differences accounted for more of the variance than cultural differences. For both the 21-year-old and 80-year-old characters, the youngest children in both cultures were the most optimistic, believing that present negative traits do not predict a negative outcome in early or late adulthood. In their reasoning, the youngest children predominantly apply a maturational theory of change; they believe deficits will naturally improve over development and be maintained as the person ages. As expected, optimism for desired changes in negative traits decreased in older children, consistent with their more sophisticated understanding of mental

states and biology. Young children's optimism does not reflect a blind endorsement of any type of change since they were reluctant to endorse changes in the control traits, particularly floating. The youngest children also showed differences in reasoning about biological and psychological phenomena. They were unlikely to attribute changes in the control and physical traits to psychological processes such as effort or learning, and they expected physical traits to change less than psychological traits. In general, differences in trait types produced stronger effect sizes than either age or cultural differences.

With the exception of the older Japanese children who overall were more optimistic about trait expression in the 80-year-old character, children from both cultures were similar in their beliefs about trait stability. Japanese adults were more likely than US adults to believe negative traits would change in the positive direction and they were more likely to make effort attributions for such changes.

6. Study 2

Even young children are more likely to attribute psychological traits to nurture and physical traits to nature and this distinction increases with age (Heyman & Gelman, 2000). In Study 2, we examined the relationship between beliefs about trait origins and beliefs about trait stability. Individuals who attribute trait differences to inborn factors may be less likely to expect trait change. Young children, being more optimistic, may be less likely than adults to believe that people are born with fixed dispositions; and therefore, they may be more likely to emphasize effort in producing trait differences. We expect to see a common pattern across cultures where a developmental increase in attributions of trait origins to inherent factors is related to an increase in beliefs of trait stability.

With respect to cultural differences, because genetic contributions to traits such as shyness and intelligence have been emphasized repeatedly in the United States (Bouchard, 1994; Seligman, 1994), Americans may be more likely to exhibit psychological essentialism and view psychological traits as more similar to biological essences, inborn and immutable over time (Gelman, 2003). In contrast, the tendency of many Japanese to focus on effort as fostering differences in intellectual skills may cause them to believe effort plays a major role in the development of other trait differences as well.

Study 2 also explored beliefs about what conditions produce the greatest trait change. We asked participants to predict the stability of traits when (1) a character tried hard to change over the developing period, and also (2) when a character simply matured and became an adult. By priming participants to think about effort, we expected cultural differences in beliefs about trait stability to be apparent at an earlier age. We also examined beliefs about positive traits as a control against children simply favoring any kind of change (Heyman & Giles, 2004; Lockhart et al., 2002). Thus, we expected similar developmental patterns in the two cultures as well as cultural variations consistent with the entity/incremental distinction. Specifically, we hypothesized that change and effort would be more salient in Japanese participants' reasoning about trait origins and stability at all ages.

6.1. Method

6.1.1. Participants—The American sample contained forty 5–6-year-old children (M = 6.2, 21 females), forty 8–10-year-old children (M = 9.1, 21 females), and sixty-four adults (36 females). The children were from a public elementary school in Connecticut. The adults were American university students.

The Japanese sample contained thirty-two 5–6-year- old children (M = 6.0, 16 females), thirty-two 8–10-year-old children (M = 8.10, 16 females), and sixty-five (32 females) adults. The

Japanese children were from a private kindergarten and a public elementary school in Niigata City. The adults were Japanese university students.

6.1.2. Stimuli

6.1.2.1. Types of traits: The physical traits were similar to those in the first study: finger/ missing finger; tall/short; good vision/ poor vision; athletic/clumsy. The same psychological traits were also used as in Study1 (smart/poor learner; kind/mean) with the addition of two new psychological traits: outgoing/shy and neat/messy.

6.1.2.2. Stories: Sixteen short stories portrayed a character that exhibited either an extreme negative or an extreme positive expression of the trait at ages 5 and 10. The characters' names matched the culture and gender of the participant (see Appendix B).

6.1.3. Procedure—Each child participant was presented with eight stories in which the protagonists displayed one of eight different traits, counterbalanced for valence and trait type. Each child was interviewed individually in a quiet room for 30–40 min. Adult participants were administered the stories in a questionnaire format in a group setting.

6.1.3.1. Origins: After being told that the protagonist had displayed the trait at ages 5 and 10, children were then asked why the protagonist exhibited the trait. Children selected their answers from randomly presented choices that reflected children's justifications from Study 1. These options were: (1) *Inborn factors*: Because she was “born” that way and has always been that way; (2) *Effort*: Because she (does not) try hard enough to show the positive expression of the trait; and (3) *Instruction/exposure*: Because she had (has never had) someone try to show or teach her how to show the positive expression of the trait. For the negative traits, there was a fourth option to chose from: (4) *Maturation*: Because she isn't old enough yet to be one of the children who shows a positive expression of that trait (Appendix B). A drawing depicted each choice (Appendix D).

6.1.3.2. Degree of change with effort vs. maturation: These questions asked how much trait change or maintenance could occur with effort in comparison to simple aging. Participants were told to imagine that the protagonist with the trait either (1) exerted a lot of effort to acquire or maintain the positive trait from ages 10 to 21, or (2) did nothing special but did get a lot older and become an adult from ages 10 to 21 (see Appendix C). These options were presented in a random order. After each item, the participants were asked to predict the degree of change that would occur for the protagonist, as in Study 1.

6.1.4. Scoring

6.1.4.1. Origins items: The percentage of participants responding to each forced choice option was determined for each age and cultural group for the psychological and physical trait categories. Responses were summed across the four traits in each category and then divided by the total number of responses to yield percentages.

6.1.4.2. Stability of negative and positive traits: Answers indicating negative expressions of a trait were scored 1, average expressions of a trait were scored 2, and extreme positive trait expressions were scored 3. Scores were then summed and averaged to produce a mean effort and maturation score for each participant for both physical and psychological traits.

6.1.4.3. Differences between positive and negative trait stability: An average overall positive trait expression score and an average overall negative trait expression score were calculated for each individual. The positive trait score was then subtracted from 3 (initial trait

expression) and the negative trait score had 1 (initial trait expression) subtracted from it resulting in a mean change score for both types of traits.

6.1.4.4. Innate origins and total change scores: For each individual an innate origins score was computed by summing their inborn origins attributions across traits. Total change scores were calculated by summing change scores across positive and negative traits.

6.2. Results

6.2.1. Beliefs about origins—Table 3 shows the percentage of responses at each age for both cultures across trait types for beliefs about the origins of negative and positive traits.

6.2.1.1. Developmental patterns: As expected, overall children in both cultures emphasized effort or a lack of effort for the origins of traits significantly more than adults did (45% vs. 13%, $\chi^2(1) = 274.44$, $p < 0.001$). Eight–10-year-old children were the most likely to attribute psychological trait differences to effort or a lack of it (8–10: 67% > 5–6: 45% > Adult: 20%, all $\chi^2(1) > 29.07$, $p < 0.01$).

As predicted, adults overall were more likely to attribute trait origins to inherent factors than the children, especially for physical and positive psychological traits (Adults: 58% > 8–10: 39%, 5–6: 35%, all $\chi^2(1) = 53.33$, $p < 0.001$). For negative psychological traits, the percentage of 5–6-year-olds who gave inborn attributions was surprisingly similar to that of adults (28% vs. 29%, $\chi^2(1) = 0.02$, n.s.). Moreover, in both cultures these two age groups believed that shyness and a lack of intelligence were significantly more likely than the traits of mean and messy to be due to inherent factors (5–6: Jpn (38 vs. 16%)/US (45 vs. 15%); all $\chi^2(1) > 3.92$, $p < 0.05$; Adult: Jpn (44 vs. 8%)/US (59 vs. 5%); all $\chi^2(1) > 21.96$, $p < 0.001$).

Compatible with the first study, the youngest children were most likely to believe that the presence of a negative trait was due to a lack of maturity (5–6: 14% > 8–10: 3%, Adult: 5%, all $\chi^2(1) > 22.09$, $p < 0.001$). Adults most strongly emphasized instruction/exposure or a lack of it in the origins of psychological traits (Adults: 43% > 5–6: 20% > 8–10: 13%, all $\chi^2(1) > 4.51$, $p < 0.05$).

6.2.1.2. Cultural differences: Cultural differences were found in participants' reasoning about the origins of physical traits. As shown in Table 3, Japanese were more likely than the US participants to attribute the presence of negative physical traits to a lack of effort. Japanese 5–6-year-olds and 8–10-year-olds were also more likely than US children of the same ages to attribute the presence of positive physical traits to effort. There were no significant differences between Japanese and US participants in their pattern of responses to the origins questions for negative and positive psychological traits at all age levels.

6.2.2. Differences in beliefs about negative and positive trait stability—Table 4 shows the mean scores and standard deviations for judgments about negative and positive trait stability for each intervention by maturity and culture. Participants at all ages believed desirable traits would continue to be expressed more positively than negative traits at age 21 (Pos–Neg (5–6): mean difference = .318, S.D. = 0.58, $t(71) = 4.61$; 8–10: mean difference = 0.761, S.D. = 0.47, $t(71) = 13.66$; Adult: mean difference = 1.09, S.D. = 0.34, $t(128) = 36.91$, all $p < 0.001$). Overall, participants believed negative traits would change more over development than positive traits *(Neg M change* = 0.78, S.D. = 0.42 > *Pos M change* = 0.41, S.D. = 0.29, $t(272) = 13.57$, $p < 0.001$). Indeed, at all ages, the mean change scores for negative traits were significantly larger than those for positive traits (5–6: *Neg M change* = 1.19, S.D. = 0.45 > *Pos M change* = 0.51, S.D. = 0.34, $t(71) = 10.13$; 8–10: *Neg M change* = 0.76, S.D. = 0.32 > *Pos M change* = 0.51, S.D. = 0.30, $t(71) = 4.99$; Adult: *Neg M change* = 0.57, S.D. = 0.26 > *Pos*

M change = 0.31, S.D. = 0.19, $t(272) = 13.57$, all $p < 0.001$), indicating greater positive trait stability.

6.2.3. Beliefs about the stability of negative traits

6.2.3.1. Developmental patterns: A repeated measures ANOVA with trait/intervention type as a within-subjects variable and culture and age as between-subjects variables revealed significant age differences and a large effect size ($F(2, 267) = 86.27$, $p < 0.001$, $\eta_p^2 = 0.393$). As in Study 1, the youngest children were the most optimistic about negative traits changing towards the positive, and adults were the least optimistic (5–6: *M* = 2.20, S.E. = 0.04 > 8–10: *M* = 1.77, S.E. = 0.04 > Adult: *M* = 1.57, S.E. = 0.03, LSD, all $p < 0.001$). This pattern was true in both cultures (see *M*s, S.D.s in Table 4, LSD, $p < 0.05$).

6.2.3.2. Cultural differences: A significant difference was found between cultures ($F(1, 267) = 19.67$, $p < 0.001$, $\eta_p^2 = 0.069$). As predicted, Japanese participants were significantly more optimistic than US participants for negative traits changing in a desirable direction over development (Jpn, *M* = 1.93; S.E. = 0.03 > US, *M* = 1.76, S.E. = 0.03). Consistent with Study 1, the effect size for cultural differences was moderate and smaller than that for age differences.

Cultural differences were significant in comparing the groups of older children and adults in the US and Japan (see *M*s, S.D.s in Table 4, LSD, $p < 0.05$). Unlike Study 1, the interaction between age and culture was not significant. Even the 5–6-year Japanese children were significantly more optimistic than US 5–6-year-olds about trait change when maturation alone was excluded and only effort was considered (5–6 Jpn: *M* = 2.55, S.D. = 0.36 vs. US: *M* = 2.33, S.D. = 0.38, $F(1, 70) = 6.45$, $p < 0.013$, $\eta_p^2 = 0.084$).

6.2.3.3. Trait/intervention type differences: Differences between trait/intervention types were significant ($F(3, 801) = 249.15$, $p < 0.001$, $\eta_p^2 = 0.483$, and as in Study 1, there was a large effect size. Overall, participants believed effort would produce more change than growing maturity (Eff, *M* = 2.13, S.D. = 0.42 > Mat, *M* = 1.44, S.D. = 0.35, $t(272) = 22.69$, $p < 0.001$) and that negative psychological traits would improve more than negative physical traits (Psych, *M* = 1.93, S.D. = 0.42 > Phys, *M* = 1.64, S.D. = 0.54, $t(272) = 10.21$, $p < 0.001$). Thus, participants predicted that the greatest changes would occur in psychological traits through the use of effort and that the smallest changes would occur in physical traits through maturation alone (Psych–Eff > Phys–Eff > Psych–Mat > Phys–Mat, all *M*s, S.D.s in Table 4, LSD, all $p < 0.01$). Even 5–6-year-old children differentiated between the stability of physical and psychological traits (Phys, *M* = 2.11, S.D. = 0.57 vs. Psych, *M* = 2.26, S.D. = 0.49, $t(71) = 2.08$, $p < 0.05$) and expected psychological traits to change more with effort over development than physical traits (*M*s and S.D.s in Table 4, $t(71) = 2.15$, $p < 0.04$).

A significant trait/intervention × age interaction ($F(6, 801) = 9.50$, $p < 0.001$, $\eta_p^2 = 0.066$) revealed that the youngest children were more optimistic about changes occurring through maturation than 8–10-year-olds and adults, who did not differ from one another (all *M*s, S.D.s in Table 4, LSD, $p < 0.001$). There was also a significant trait/intervention × culture interaction ($F(3, 801) = 7.01$, $p < 0.001$, $\eta_p^2 = 0.03$). Further analysis showed that overall Japanese were more optimistic than Americans for all trait changes, particularly those by effort. Only for the improvement of physical traits by maturation alone were there no cultural differences (Psych–Eff: Jpn, *M* = 2.50, S.E. = 0.037 > US, *M* = 2.31, S.E. = 0.034; Phys–Eff: Jpn, *M* = 2.14, S.E. = 0.048 > US, *M* = 1.80, S.E. = 0.044; Psych–Mat, Jpn, *M* = 1.66, S.E. = 0.052 > US, *M* = 1.45, S.E.= 0.047, LSD, all $p < 0.05$). No other significant differences were found.

6.2.4. Beliefs about the stability of positive traits

6.2.4.1. Developmental patterns: A repeated measures ANOVA with trait/intervention type as a within-subjects variable and culture and age as between-subjects variables revealed significant age differences ($F(2, 267) = 18.88$, $p < 0.001$, $\eta_p^2 = 0.124$). Adult participants were more likely to believe positive traits would remain stable over development than the two groups of children who did not differ significantly in their beliefs (Adult: $M = 2.69$, S.E. = 0.024 > 8–10: $M = 2.49$, S.E. = 0.032; 5–6: $M = 2.50$, S.E. = 0.032, LSD, $p < 0.01$).

6.2.4.2. Cultural differences: There was no overall main effect of culture for positive traits. Subsequent analysis by age groups found that US adults were more likely than Japanese adults to believe positive traits would be maintained, consistent with an entity perspective (US $M = 2.73$ > Jpn $M = 2.65$, S.E.s = 0.024, $F(1, 127) = 5.19$, $p < 0.05$). As shown in Table 4, US adults were more likely than Japanese adults to believe that psychological traits would be maintained by effort ($F(1, 127) = 12.27$, $p < 0.01$) and that physical traits would be maintained by maturation ($F(1, 127) = 5.01$, $p < 0.05$). Although there were no overall cultural differences among the children, Japanese 8–10-year-olds were more optimistic than US 8–10-year-olds about psychological trait maintenance through effort ($F(1, 71) = 4.93$, $p < 0.05$; see Table 4).

6.2.4.3. Trait/intervention differences: Significant differences were found between trait/intervention types ($F(3, 801) = 173.35$, $p < 0.001$, $\eta_p^2 = 0.394$), and again, the effect size for traits was large. Overall, participants viewed positive physical traits as more stable than positive psychological ones ($M = 2.63$, S.D. = 0.33 > $M = 2.54$, S.D. = 0.35, $t(272) = 4.39$, $p < 0.001$). Participants also believed that the use of effort over development was the best insurance for maintaining a positive trait and that the positive expression of a trait was least likely to continue by means of maturity alone (Phys–Eff = Psych–Eff > Phys–Mat > Psych–Mat, all *M*s, S.D.s in Table 4, LSD, all $p < 0.001$). Further analysis of a significant trait/intervention × age interaction ($F(6, 801) = 8.03$, $p < 0.001$, $\eta_p^2 = 0.057$) found that the these differences between trait intervention types held within all age groups except for: (1) the adults, who believed effort would maintain psychological traits more than other traits and (2) the older children, who believed effort would maintain physical traits more than other traits (all *M*s, S.D.s in Table 4, LSD, all $p < 0.05$). No other significant differences were found.

6.2.5. Relationship between beliefs about origins and stability of traits—Overall, participants' summed innate origins scores were negatively correlated with their total change scores ($r(271) = -0.459$, $p < 0.001$). Within each age group, individuals who were more likely to attribute trait differences to innate factors expected more stability and less change in traits over development: 5–6-year-olds, $r(70) = -0.268$, $p < 0.02$; 8–10-year-olds, $r(70) = -0.403$, $p < 0.001$; adults, $r(127) = -0.195$, $p < 0.03$.

6.3. Summary of Study 2

Developmental similarities across cultures again overshadowed cultural differences. As in Study 1, differences between age groups accounted for more of the variance in reasoning about trait stability than cultural differences. The youngest children in both cultures were again the most optimistic about negative trait change. The youngest children were the most likely to believe growing maturity alone could produce desired changes in negative traits, and along with the other participants, they believed negative traits would change more than positive ones. Although even the youngest children perceived psychological traits as less stable than physical traits, the older age groups in both cultures more clearly differentiated the origins of physical and psychological traits. The children, particularly 8–10 years, were more likely than adults to believe that individual differences in traits are due to effort. At all ages, beliefs in innate origins were systematically related to beliefs of greater trait stability. Adults overall showed greater

psychological essentialism in their thinking about traits; they made more inborn attributions and viewed traits as more stable over development.

Differences in Japanese and US participants' beliefs were congruent with the incremental/entity distinction. Japanese participants were more likely than Americans to believe that psychological factors such as effort can influence the expression of physical traits. They also thought effort could produce more change in negative traits. Finally, although all age and cultural groups believed positive traits would remain relatively stable, this was particularly true of US adults. The greater optimism for positive trait stability in US adults fits with an entity view of traits in which positive attributes are emphasized and perceived as fixed.

7. General discussion

7.1. Commonalities across cultures in young children's optimism

Japanese and US children are markedly similar with respect to beliefs about the stability and origins of traits. In both cultures, the youngest children are the most optimistic about trait stability and the most likely to attribute positive changes in traits to maturation. Young children were truly optimistic; they believed that positive traits were more stable than negative ones and that positive changes occurring during development would be maintained over aging. Young children's optimism reflected thoughtful inferences about the nature of the world and not simply wishful thinking. In justifying changes in negative traits, young children rarely, if ever, made attributions to explicit magical processes (see also Harris, 2000). Young children also showed conceptual coherence in their beliefs: they thought “inborn” traits would be less likely to change.

Young children's optimistic view of trait stability might explain why they are more likely to persevere in the face of failure and why they have higher self-esteem than adults (Rholes, Blackwell, Jordan, & Walters, 1980; Robins & Trzesniewski, 2005). This optimism might also cause children to be less evaluative in their judgments of other people and more likely to expect changes in others' negative behavior (Giles & Heyman, 2004). Such optimism is likely to be adaptive across all cultures and possibly universal since it helps children remain motivated while trying to learn complex skills and behaviors.

Young children's extreme optimism may partly stem from their exposure to the spectacular changes that naturally occur with development, both in themselves and in others: the tadpole grows up to be a frog; the speechless baby begins to talk, and by adolescence, sprouts breasts or facial hair. These experiences are common across all cultures and, interpreted through a similar cognitive lens, they would help shape children's belief that maturation is a powerful engine of change. Books and stories in the culture that children are exposed to, such as Andersen's *The Ugly Duckling* and Carle's *The Very Hungry Caterpillar*, popular both in the US and in Japan, may further support these views. Similarly, parents may reinforce children's maturational beliefs by being reluctant to attribute negative behavior to dispositional differences (Dix, Ruble, Grusec, & Nixon, 1986; Miller, 1995) and by constantly reminding their children of all the things they will be able to do “when they are older”.

Of course, most positive traits are correlated with increased age: adults are taller, know more and run faster. Youngest children's optimism is unrealistic only when it assumes that extreme positive traits can occur for all people who want them. Young children's unrealistic optimism may partly stem from their difficulty in thinking about relative differences in trait expression among adults. Young children may perceive all adults as “best”, as their vastly greater competence swamps any individual differences that are present.

Young children also seem to confuse possible outcomes with probable ones. Many supported their maturational responses with individual examples of change: “Because he's older, and the tip of my uncle's finger grew back when he got older”, believing that if something is possible, then it is likely to happen. Even adults make this mistake when reasoning about events in the far future (Weinstein, 1980). Young children may be particularly susceptible to the availability heuristic, so that once the child has thought about something as possible, it seems more likely to occur (Tversky & Kahneman, 1973).

Young children did not view all traits as showing dramatic improvement with maturation. Children viewed traits that define category membership (human vs. bird) as more stable and similar to biological essences than traits that are more variable across individuals within a category. Just as young children show essentialist thinking about race and gender (Gelman, 2003), they thought it was highly unlikely that a person could ever develop the ability to float in the sky. Differences in trait types had a strong effect on trait reasoning in both studies and may represent a set of early emerging and fundamental distinctions. In particular, contrasts between physical and psychological traits, positive and negative traits, as well as effortless and effort-laden traits appeared to influence even the youngest children's reasoning. Consistent with other studies, young children were more likely to perceive physical traits and positive characteristics as enduring (Giles & Heyman, 2003; Inagaki & Hatano, 2002a, 2002b). Even within psychological traits, their judgments mirrored adults' beliefs about which characteristics have a stronger genetic basis. Young children in both cultures saw a lack of intelligence and shyness as more likely to be “inborn” than messiness and meanness, which they attributed to a lack of effort. It is remarkable that even 5–6-year-olds should have such strongly contrasting intuitions about these two types of psychological traits. Such differentiations seem to reflect young children's beliefs that some traits are more a part of a person's fundamental nature than others.

A belief in negative trait change over development and aging is not incompatible with a bias to look for fixed underlying essences to explain differences between groups. Although young children are aware of differences in innate potential (Heyman, Gee, & Giles, 2003), they may not know how such differences constrain future outcomes. Even for adults, the inner potential of a person and the changes that will occur over development are often difficult to predict from the initial state. The phenotypic expression of a genetic disposition can take time to develop or be delayed (e.g., a “late bloomer”), or it can vary depending on individual and environmental factors, such as free will, effort, or diet. Indeed, early individual differences may not seem as powerful in determining adult outcomes as group differences. Young children often perceived individual variations in abilities as less important than children's shared state of deficiency. Several children who thought being shy or a poor learner was inborn explained that “no children are as good at learning as adults are” and that “all children are pretty shy”. Because of this developmental “floor effect”, young children may see most of their peers as relatively similar in their deficiencies and assume that maturation equalizes any early differences.

Intentional processes may also play an important role in young children's understanding of differences in trait expression. Young children know they can intentionally alter the outward expression of traits such as messiness more easily than floating in the air. Indeed, the surface expression of traits such as intelligence are often only indirectly related to their underlying essence: A person can be intelligent yet intentionally decide to present herself to others as gullible and naïve. Believing that trait deficits can reflect momentary differences in intention and effort, young children may overestimate the power of volition to alter trait expression over development (Kalish, 2002). Because young children are just starting to master skills that require prolonged effort, they did not seem to appreciate the limitations of effort to produce a desired result or the difficulty of sustaining will over a long period of time. Effort was perceived as “easy”.

7.2. From naïve optimism to effort-dependent optimism

The shift at around 8 years from a naïve optimism about change to a more effortful one may arise from a more sophisticated, causal view of traits and an increasing ability to evaluate relative differences in trait expression. Older children are more realistic in assessing the capabilities of adults, who are no longer perceived as completely competent but as average. Maturation alone does not guarantee a person will be the fastest runner or the most intelligent; a person has to exert personal effort as well in order to be best. The embrace of effort by older children seems to reflect inputs from the wider culture, particularly school, that emphasize practice and hard work. Older children perceived effort as more arduous than younger children and realized it is often hard to sustain the effort that is required to change: “He could've gotten to be the same as others if he stayed up every night and studied”. Moreover, older children realized that internal dispositions differ and that some people have to try harder than others to achieve the same goal. Although they were more sensitive to differences in abilities (Nicholls, 1978), older children still strongly believed that effort could help level the playing field by allowing everyone, even those with less potential, the opportunity to be at least “average”.

7.3. Constrained optimism: learning to fool mother nature

Japanese and American adults had a more stable view of traits than children, matching the increased stability in their own functioning (Costa & McCrae, 1994). Even when predicting trait expression in the distant future, adults were less optimistic than the children about negative traits. A more stable view of traits may be advantageous in helping adults decide where to invest their time and energy. If you are not inherently coordinated, it makes little sense to focus your efforts on being a professional athlete. Although they showed evidence of greater psychological essentialism, adults were not entirely unoptimistic (Taylor & Armor, 1996); they believed that even those traits with a known genetic basis could change in a modest way with effort.

Adults emphasized external factors such as instruction and exposure as a source of trait differences. Exposure to the right environmental stimulus was seen as necessary to release any inner potential: “No matter how inherently kind you are, if you grow up with mean people, you won't know how to act kindly”. Adults' focus on instruction reflected their belief that, without knowing what to do, effort is often futile. Being more aware of the limitations posed by fixed potential, adults may feel that they need ways to outsmart “mother nature”, such as strategies for improving memory or tricks to alter a sluggish metabolism. Adult's obsession with self-help books that promise dramatic self-transformation is consistent with their embrace of instruction.

7.4. Cultural variations in beliefs about trait stability and origins

Although the effect sizes were moderate, significant cultural differences in reasoning about trait stability were found in both studies. As expected, Japanese believed negative traits would change in the desired direction more than Americans. In this study, Japanese beliefs about change were more optimistic than incremental, since they believed positive traits would remain relatively stable. This greater optimism for trait stability is particularly intriguing since Japanese adults generally show less self-enhancement and less unrealistic optimism about the future than Westerners (Heine & Lehman, 1995). The motivation within interdependent cultures to fit into the social milieu and adapt to different social roles can account for these seemingly contradictory results. On the one hand, Japanese seek to be part of the group and “not stick out”, so commonalities are emphasized rather than unique strengths, resulting in less self-enhancement. On the other hand, a focus on situational variables and fitting into the group assumes that significant changes are possible and produces the expectation that people can change in a desirable direction. The stronger belief in change shown by Japanese participants has also been found in other interdependent cultures on tasks other than trait stability (Ji,

Nisbett, & Su, 2001). Indeed, although the incremental/entity distinction has been suggested as influencing East Asian/Western beliefs about trait stability (Ji et al., 2001), these two studies are the first to show this distinction clearly, perhaps because both the likelihood and degree of change were assessed in a relatively large sample.

Living in an interdependent culture apparently influences beliefs about change even at a young age. When primed to think about effort, Japanese children showed more optimism than US children for negative trait change. However, the greater prominence of cultural differences in older children and adults suggests that cultural factors exert a larger influence on folk psychologies with increasing age (Miller, 1986). Indeed, Japanese adults' belief that extreme positive changes are still possible implies that the more stable view of traits that develops in US adults is not an inevitable outcome of greater cognitive sophistication, but reflects a specific cultural milieu.

Japanese were more likely than Americans to attribute differences in trait expression to effort, including the origins of physical trait differences. The extension of effort to physical traits by Japanese may reflect a greater sensitivity to the interdependence between mind and body (Lillard, 1998), or perhaps, simply an overvaluation of effort and its effects. Effort holds a place of central importance in Japanese thought and culture: effort (“doryoku”) is the most popular word in Japanese and it is seen as an important mechanism for change (Heine, 2005; Holloway, 1988). Because Japanese parents are more likely to attribute trait differences in intellectual functioning to differences in effort rather than ability (Stevenson & Lee, 1990), this may color Japanese children's thinking about the influence of effort on other traits as well. Not surprisingly, Japanese at all ages believed that effort could produce more trait change than Americans did. American participants also endorsed effort, but by the time they were adults, they believed effort would have a more limited (“could change a bit but not much”), and sometimes superficial effect on trait change. Even when changes were predicted, several US adults implied that these were only surface changes and the true essence of the person might not be altered: “I suspect at times some of her original meanness might resurface”.

Although cultural differences accounted for less of the variance than age differences and differences in trait types, even moderate effects can have important consequences, as has been shown in studies linking smoking to cancer (Trusty, Thompson, & Petrocelli, 2004). For example, cultural differences in beliefs about negative trait change and effort as a mechanism of change may explain why Japanese have higher achievement motivation (Stevenson & Stigler, 1992) and why they are more likely than Americans to persist on tasks when they fail (Blinco, 1992; Heine et al., 2001). People frequently think about changing themselves, but they will only expend time and effort on such improvements if they believe those characteristics will change (Dweck & Leggett, 1988). Interpreting an undesirable characteristic as a lack of effort, rather than a lack of potential, Japanese may be more motivated to work hard to improve personal deficits. American adults, who view traits as relatively fixed, may thrive on their talents, but may be more vulnerable to feelings of helplessness when faced with personal flaws. Future studies might examine how variations in beliefs about trait stability, for the self as well as others, influence feelings of self-esteem, helplessness, and the likelihood of depression in different age and cultural groups.

8. Conclusion

Although there are differences in reasoning about trait stability and origins predicted by culture, at all ages we are more alike than different. Japanese and Americans share the belief that people continue to change in positive ways through out development, no matter how small and superficial the changes might be. Being able to imagine the future, all human cultures may need to believe that development is a positive trajectory towards becoming better.

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Appendix A. Study 1 – story example

A.1. Learning difficulties

When Taro was 5, he had a lot of trouble learning things in school. He wished he could be smarter. He often thought about learning and remembering lots of things and being really wise.

Then Taro was 10. When Taro was 10, although he knew lots more than when he was 5, he still had a lot of trouble learning and remembering things in school compared to the other children in his class. Taro still thought a lot about being really smart. He wanted to be very wise at school.

Now Taro is much older, 21 years old. Taro has never been to a hospital for an operation and he takes no medicine on a regular basis. Which of the following do you believe is most likely to have happened to Taro?

1. Taro still has trouble learning and remembering things in school compared to most boys his age. He still isn't very smart.
2. Taro no longer has so much trouble learning and remembering things in school. He is about as smart as most boys his age are.
3. Taro no longer has any trouble learning and remembering things at all. He does excellent work in school. He is one of the smartest boys among people his age.

Appendix B. Study 2 – origin story and responses

B.1. Example of negative trait origin story

When Marty was 5 he was the messiest boy in his class. He always dressed in a sloppy way and his desk and papers were always a mess. All the other children were much neater and more organized. Now Marty is 10 and he is still the messiest boy in his class. His clothes and desk are always a mess and his work is always messy and disorganized.

Which do you think best explains why Marty is so messy? Do you think Marty is so messy because …

1. Inborn factors: Marty was born that way and has always been messy and disorganized.
2. Effort: Marty doesn't try hard enough to be neat and organized.
3. Instruction/exposure: Marty has never had someone try to show or teach him how to be neat and organized.
4. Maturity: Marty isn't old enough yet to be one of the really neat and organized children in his class.

B.2. Example of positive trait origin story

When Ami was 5, she could see very well compared to other children her age. She was able to see things that were far away very clearly. Now Ami is 10 and she still has excellent eyesight compared to other children her age. She is still able to see things very clearly that are far away.

Which do you think best explains why Ami's eyesight is so good? Do you think Ami can see so well because …

1. Inborn factors: Ami was born with good eyesight and has always been that way.
2. Effort: Ami tries hard to have good eyesight.
3. Instruction/exposure: Ami had someone show her or teach her how to see clearly and have good eyesight.

Appendix C. Study 2 – degree of stability with intervention story

C.1. Example of negative trait story

Sara was very shy and quiet when she was 5 and also when she was 10, compared to most children her age. She was uncomfortable in large groups and was shy about meeting new people. Now Sara is much older, 21 years old. She's never been to a hospital for an operation and she doesn't take any medicine on a regular basis.

1. Effort: Suppose from the time she was 10 until she was an adult, 21, Sara tried hard to be very outgoing and less shy. Suppose she put a lot of effort into feeling more comfortable in groups and into being more talkative. What do you think Sara would be like when she's 21 if she tried hard to be more outgoing and less shy from the time she was 10 until she was 21?
2. Maturation: Suppose from the time she was 10 until she was an adult, 21, Sara did nothing special to make herself more outgoing (more talkative and less shy), but she did get older and become an adult. What do you think Sara would be like at 21 if she did nothing special but she did get older and become an adult?

C.2. Example of positive trait story

Takuya was very tall when he was 5 and also when he was 10, compared to most children his age. Now Takuya is much older, 21 years old. He's never been to a hospital for an operation, doesn't take any medicine on a regular basis, and has never been in an accident.

1. Effort: Suppose from the time he was 10 until he was an adult, 21, Takuya put a lot of effort into continuing to be really tall. Suppose he tried hard to continue being the tallest. What do you think Takuya would be like when he's 21 if he tried hard to continue being very tall from the time he was 10 until he was 21?
2. Maturation: Suppose from the time he was 10 until he was an adult, 21, Takuya did nothing special to continue being very tall, but he did get older and become an adult. What do you think Takuya would be like at 21 if he did nothing special to continue being the tallest, but he did get older and become an adult?

Appendix D. Study 2 – pictures accompanying negative trait origins stories

1. .

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Table 1

Mean stability scores for traits over the developing (21-year-old protagonist) and aging (80-year-old protagonist) periods

Culture–age	*N*	Trait type					
		Psychological		Physical		Control	
		Mean	S.D.	Mean	S.D.	Mean	S.D.
Developing period: 21-year-old character							
Jpn 5–6	48	2.42	0.63	2.02	0.59	1.45	0.70
US 5–6	54	2.37	0.61	2.13	0.58	1.59	0.67
Total	102	2.39	0.62	2.08	0.58	1.52	0.68
Jpn 8–10	24	2.29	0.36*	1.71	0.34	1.04	0.14
US 8–10	33	2.13	0.35	1.65	0.33	1.05	0.15
Total	57	2.20	0.36	1.68	0.33	1.05	0.15
Jpn adult	24	2.27	0.42***	1.57	0.28***	1.06	0.22*
US adult	36	1.57	0.34	1.31	0.20	1.00	0.00
Total	60	1.85	0.51	1.42	0.27	1.03	0.14
Overall	219	2.19	0.57	1.79	0.53	1.26	0.54
Aging period: 80-year-old character							
Jpn 5–6	48	2.48	0.66	2.03	0.60	1.68	0.70
US 5–6	54	2.46	0.57	2.08	0.58	1.62	0.78
Total	102	2.47	0.61	2.06	0.59	1.64	0.74
Jpn 8–10	24	2.56	0.45*	1.78	0.41	1.15	0.23
US 8–10	33	2.33	0.53	1.60	0.43	1.12	0.25
Total	57	2.43	0.51	1.68	0.43	1.13	0.24
Jpn adult	24	2.40	0.57***	1.70	0.33***	1.08	0.28
US adult	36	1.72	0.37	1.39	0.20	1.01	0.08
Total	60	1.99	0.56	1.52	0.30	1.04	0.19
Overall	219	2.33	0.61	1.81	0.54	1.35	0.60

Range of scores: 1 (Stable negative trait) to 3 (Extreme positive change).

Cultural differences:

* $0.05 < p < 0.10$

*** $p < 0.001$.

Table 2

Justifications for trait change: percentage of responses by category

	5–6-year-olds[a]		8–10-year-olds[b]		Adults[c]	
	Japan	**US**	**Japan**	**US**	**Japan**	**US**
Number of responses	197	361	148	169	143	106
Type of explanation						
Increased age	0.60	0.50	0.29	0.31	0.13	0.27*
Biological	0.03	0.05	0.09	0.09	0.12	0.16
Effort	0.09	0.11	0.32	0.28	0.33	0.17*
Learning	0.05	0.09	0.02	0.13*	0.18	0.08
Desire	0.10	0.13	0.16	0.01*	0.09	0.06
Other	0.13	0.12	0.12	0.18	0.15	0.26*

[a] $\chi^2(5) = 7.69$, n.s.

[b] $\chi^2(5) = 39.54$, $p < 0.001$.

[c] $\chi^2(5) = 22.10$, $p < 0.001$.

* $0.05 < p < 0.10$.

Table 3

Origins of trait differences: percentage of responses

	5–6-year-olds		8–10-year-olds		Adults	
	Jpn (64)	**US (80)**	**Jpn (64)**	**US (80)**	**Jpn (132)**	**US (128)**
Origins of negative traits						
Physical						
Inborn	0.27	0.62	0.56	0.74	0.77	0.77
Lack of effort	0.42	0.17	0.37	0.18	0.12	0.02
Lack of instruction	0.17	0.11	0.05	0.04	0.05	0.15
Immaturity	0.14	0.10	0.02	0.05	0.06	0.06
		$\chi^2(3) = 19.59^{***}$		$\chi^2(3) = 7.27^{*}$		$\chi^2(3) = 15.47^{**}$
Psychological						
Inborn	0.27	0.30	0.26	0.10	0.26	0.32
Lack of effort	0.28	0.39	0.64	0.69	0.15	0.20
Lack of instruction	0.27	0.15	0.08	0.17	0.55	0.45
Immaturity	0.18	0.16	0.03	0.04	0.04	0.03
		$\chi^2(3) = 3.52$		$\chi^2(3) = 7.26^{*}$		$\chi^2(3) = 3.16$
Origins of positive traits						
Physical						
Inborn	0.27	0.52	0.42	0.68	0.85	0.95
Effort	0.56	0.34	0.49	0.31	0.07	0.02
Instruction	0.17	0.14	0.09	0.01	0.08	0.03
		$\chi^2(2) = 10.23^{**}$		$\chi^2(2) = 11.58^{**}$		$\chi^2(2) = 5.98^{*}$
Psychological						
Inborn	0.19	0.30	0.25	0.14	0.35	0.44
Effort	0.62	0.51	0.67	0.68	0.25	0.22
Instruction	0.19	0.19	0.08	0.18	0.40	0.34
		$\chi^2(2) = 2.44$		$\chi^2(2) = 5.19^{*}$		$\chi^2(2) = 2.12$

$^{*}0.05 < p < 0.10$.

$^{**}p < 0.01$.

*** $p < 0.001$.

Table 4

Mean stability scores by valence, intervention, and trait type

Culture–age	*N*	Intervention/trait type								Overall	S.D.
		Effort/psych		Effort/physical		Maturation/psych		Maturation/physical			
		Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.		
Negative traits											
Jpn 5–6	32	2.61	0.38	2.50	0.49*	2.11	0.80	1.86	0.76	2.27	0.44
US 5–6	40	2.45	0.52	2.21	0.62	1.90	0.82	1.93	0.76	2.12	0.46
Total	72	2.52	0.46	2.34	0.58	1.99	0.81	1.90	0.75	2.19	0.45
Jpn 8–10	32	2.53	0.42***	2.14	0.54***	1.52	0.59*	1.27	0.54	1.87	0.37***
US 8–10	40	2.29	0.34	1.79	0.42	1.31	0.38	1.30	0.35	1.67	0.23
Total	72	2.40	0.39	1.94	0.51	1.40	0.49	1.28	0.44	1.77	0.32
Jpn adult	65	2.36	0.38**	1.77	0.53****	1.36	0.45***	1.20	0.34	1.67	0.24***
US adult	64	2.20	0.35	1.40	0.50	1.15	0.33	1.15	0.30	1.48	0.23
Total	129	2.28	0.37	1.59	0.55	1.26	0.41	1.17	0.32	1.57	0.24
Overall	273	2.41	0.41	1.97	0.63	1.56	0.64	1.45	0.58		
Positive traits											
Jpn 5–6	32	2.82	0.30	2.73	0.52	2.06	0.66	2.36	0.56	2.50	0.51
US 5–6	40	2.68	0.44	2.76	0.30	2.21	0.72	2.32	0.56	2.49	0.51
Total	72	2.75	0.39	2.75	0.41	2.15	0.69	2.34	0.56	2.50	0.51
Jpn 8–10	32	2.86	0.29**	2.91	0.30	2.00	0.61	2.30	0.52	2.52	0.43
US 8–10	40	2.68	0.35	2.89	0.24	1.96	0.57	2.31	0.55	2.46	0.43
Total	72	2.76	0.34	2.90	0.26	1.98	0.58	2.31	0.54	2.49	0.43
Jpn adult	65	2.85	0.28***	2.82	0.30	2.46	0.44	2.49	0.38**	2.65	0.35**
US adult	64	2.98	0.11	2.86	0.23	2.45	0.44	2.64	0.37	2.73	0.29
Total	129	2.91	0.22	2.84	0.27	2.45	0.44	2.57	0.38	2.69	0.33
Overall	273	2.81	0.31	2.83	0.31	2.19	0.58	2.40	0.49		

Negative traits: 1 (stable negative trait) to 3 (extreme positive change); positive traits: 3 (stable positive trait) to 1 (extreme negative change).

Cultural differences:

* $0.05 < p < 0.10$

** $p < 0.05$

*** $p < 0.01$

**** $p < 0.001$.