Arctic Instincts? Retained psychological adaptations to the late Pleistocene Arctic in modern East Asian populations

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ABSTRACT

Modern East Asian populations have retained extensive psychological adaptations in general personality traits and social dynamics to arctic environments, from ancestral Northeast Asian populations' late Pleistocene habitation of Arctic and subarctic North Eurasia, prior to migrating southwards into East Asia in the Holocene. The first cross-cultural study between modern East Asian and Inuit populations is conducted, as an epistemically sound ethnographic analogy for paleolithic Arctic populations, and a shared set of arctic adapted personality traits is proposed- a higher than average tendency of emotional control/suppression, harmony/cohesion, indirectness, self and social consciousness, reserve/introversion, cautiousness, and perseverance/stoic endurance. The proposed candidate Arcticist traits are tested for environmental causation in modern Polar personnel psychology, using decades of personality research on workers, expeditioners, and military personnel who adapt to Arctic and Antarctic environments. Consistently replicated results support causation of polar climates in necessitating the proposed Arcticist traits for adaptive success, and such traits are generalizable and predictive of adaptive success even across modern European populations that temporarily live in polar climates. A theoretical framework for the generalizable principles of arctic psychological adaptation is introduced, a novel methodology for testing causation and formation of psychological adaptation to post-OoA environments is proposed, and previous popular theories on the roots of Eastern psychology are reexamined in the light of Arcticism theory.

Introduction

About 50,000 years worth of human adaptation to late Pleistocene environments is conspicuously missing from our psychological models of specific populations around the world. Evolutionary psychology typically uses the savannah and generally hospitable ancestral environments to theorize about psychological evolution in the distant past, and ecological psychology typically uses the inhabited Holocene

environment to theorize about cultural and cognitive adaptations in present day local populations (Nisbett, 2003; Kitayama et al. 2022). Although these are adequate models for exploring psychological evolution and adaptation in the pre-Out of Africa period and Holocene period, it overlooks the various unique environments encountered in the path of late Pleistocene OoA human dispersal, some of which were inhabited for far longer than the current Holocene environments. Certain modern populations experienced additional adaptation and selective pressures in extreme and inhospitable environments like the Arctic[1], which presents a harsher and more unusual adaptive challenge than that of our shared pre-OoA savannah or most populated Holocene regions. Has this late Pleistocene adaptation to a vastly different climate affected the psychology and culture of their modern day descendant populations?

Substantial evidence show that the paleolithic ancestral populations of modern Northeast Asians were amongst or admixed with the inhabitants of the late Pleistocene Arctic (Pitulko et al., 2016, Sikora et al, 2019) and subarctic North Eurasian steppe climates (Guthrie, 1996), prior to migrating and settling south into mainland East Asia and Japan (Nakaoka et al., 2013). Although it is unclear whether these inhabitants of the North Eurasian mammoth steppe consisted solely of ancient Eurasians that migrated northeast, or also basal Austronesian-related East Asians that migrated north- there is general consensus that the glaciation of the LGM ~26 kya forced the inhabitants of Northern Eurasia into cold adaptation (Straus et al., 2016), and descendants of these admixed cold adapted northern populations later in the Holocene ~9 kya migrated southwards into (or back into) mainland East Asia, mostly displacing and somewhat mixing with the earlier migrated ~65-50 kya Southern Route Austronesian-related basal East Asians (Yang et al., 2020). This "Overlapping model" (Di and Sanchez-Mara, 2011) of East Asian population history is supported by substantial genetic (Di and Sanchez-Mara, 2014; Di et al., 2015; Zhong et al., 2010), craniometric (Matsumura et al., 2019, 2021), and as this paper will add, psychological evidence showing modern Northeast Asians' retained adaptation to extreme cold climates.

Despite decades of established literature on the psychology of contemporary indigenous Arctic foragers, and on the psychology of temporary polar personnel from developed nations, there is minimal exploration connecting these two subfields to establish a generalizable theory on the principles of human psychological adaptation to the Arctic, one robust enough to be extrapolatable back in time to explore how paleolithic humans may have adapted to late Pleistocene Arctic Eurasia, and if or to what extent arctic psychological adaptations may be retained in modern day East Asians and related populations.

Current models of Eastern psychology mainly focuses on various Holocene factors that were present after ancestral Northeast Asian populations migrated into East Asia, such as rice farming, Confucianism, Buddhism, Taoism, Bushido, Shintoism, natural disasters, geography, and various dynastic influences (Nisbett 2003; Kitayama et al., 2022). Any further speculation into the distant past just assumes the standard pre-OoA "savannah model" of evolutionary psychology. However, their late Pleistocene evolution in Arctic Eurasia has been entirely overlooked and missing in such models, despite it being as long if not multiples longer in temporal duration compared to the Holocene factors.

The absence of post-OoA and pre-Holocene ancestral environmental adaptation is an unnoticed issue in most other psychological and sociocultural models of world populations, and deserves examination and inclusion into such models, especially when it was impactful enough to shape the distinct ethnic morphological appearance that people tend to identify themselves with. Such a significant and long

[1] The term "Arctic" used in this paper is not necessarily referring to the textbook geographical definition of the exact northern circumpolar region, but to a climate that is colloquially known as "Arctic" which includes subarctic climates- a generally extremely cold, dry, glaciated, snow covered biome that can have taiga, steppe, and tundra environments.

duration post-OoA adaptation may have significant influence on the subsequent culture, sociology, psychology, behavior, and possible predispositions in the population to how compatible or receptive they are to the later ideologies they choose in their civilizational process. Although this paper focuses on late Pleistocene Arctic adaptation in East Asians[2], the methodology and theoretical framework proposed may be useful for post-OoA atypical environment psychological adaptation in other populations as well.

This paper is a condensed introduction and summary of the current findings from the ongoing and incomplete Arcticism project, an attempt to discover the first principles of psychological adaptation to arctic/subarctic environments (Arcticism[3]) and other atypical climates, and the extent of retention of arctic adapted traits in modern descendant populations.

Theoretical Framework

Humans have been pondering the influence of climate and ecology on the local population's culture and philosophies since antiquity, from ancient Greek philosophers to Montesquieu to Nisbett, etc. The problem with these inquiries up until now is that they have been mostly limited in scope to Holocene environments, usually starting from archaeological or literary documentation of history. A popular example of this Holocene model is *The Geography of Thought* by Richard Nisbett (2003), who speculates on how the differing ecologies of China (fertile plains, rivers, low mountains) and Greece (mountains and coastal regions) may have contributed to their respective collectivist/individualist tendencies, folk metaphysics, and epistemologies that characterized Eastern and Western thought. This ecological methodology is sensible, and it's scope of inquiry as limited to Holocene environments is understandable for the early 2000s- given the comparative lack of population genetics advancements and data to what we have today, the obscurity of Inuit studies and Polar personnel psychology research, lack of software tools, and a lack of interest in exploring something as epistemically uncomfortable as pre-Holocene environments, for which there is relatively scarce empirical evidence, and backward inferences on prehistoric psychology with incomplete and proxy data was still an underdeveloped method.

Arcticism theory would be a regional theory of the proposed experimental Total Evolutionary Ecologies (TEE) model of cultural psychology, where the various ecologies inhabited by specific ethnic population's entire post-OoA migratory path is taken into account in modeling their distinct cultural psychology, from various overlooked late Pleistocene environments, to the commonly modeled Holocene environments, up to modern factors affecting the population today. This is similar to the concept of Environment of Evolutionary Adaptedness (EEA) in evolutionary psychology, which is the statistical composite of the environmental properties encountered in a species' evolutionary history that successfully selected for certain adaptive traits within the species (Tooby and Cosmides, 1990). However, where the EEA focuses on environmental properties that exerted selection pressures, the TEE's complete model encompasses all environments and their properties encountered, including environments that exerted relatively minimal or unchanging selection pressures compared to our pre-OoA environment, of which the relative ease or

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[2] The term "East Asian" or "Eastern" is used as an anthropological demonym for peoples and cultures from Northeast Asia and their southern diaspora, and not necessarily as a reference to the earlier indigenous Austronesian groups of East Asia unless specifically stated.

[3] This paper uses "Arcticist" as an adjective, meaning factors related to or characteristic of Arctic/Subarctic/Antarctic adaptation.

perceived stability can affect a population's resulting psychology and epistemology. In the TEE model, environmental factors encountered on the migratory path are weighted for temporal duration (in which a longer duration of habitation in and adaptation to, would be weighted more than one of shorter duration), and differential intensity (an environment adaptively different or harsher than the pre-OoA environment would be weighted as more impactful in differentiating a population's psychological traits than a evolutionarily similar or easier environment. Neurobiological studies show that demanding climates, but not temperate climates, increase phenotypical plasticity of Big Five personality traits (Fischer et al., 2018)) and more recent modern factors would receive a increasing recency multiplier[4] in weighting due to "freshness" and "immediate relevance", and more recent factors are likely less to be "engrained" and "instinctual" and more likely to be malleable or needing cultural reinforcement to maintain.

An experimental methodology is proposed along with the TEE theory to test for causation of the psychological traits in a modern population proposed to be as a result of ancestral adaptation to a particular ecology. First, a population's ancestral environments (usually late Pleistocene migration environments) that isn't currently included in typical Holocene models, is identified using paleogenetic, paleo-archaeological, population history methods. An epistemically sound ethnographic analogy is made with the indigenous groups of that environment to examine if there are notable shared traits between the indigenous group and the modern population, and a list is made consisting of candidate traits that may have formed as a result of adaptation to such an environment. The adaptive mechanism of the traits must match the adaptive challenges of that environment.

To avoid a "just so" story, the candidate traits are then tested for environmental causation and real time formation using modern personnel psychology literature within that specific environment, if available. To establish generalizability across other human populations, and avoid the confounder of the personnel already being ancestrally adapted to such an environment, most subjects must be from nations that are not from that ancestral environment. These personnel psychology studies are examined to see if the adaptive challenges of such environment are identical to that faced by the indigenous group, to see if such challenges necessitate the formation of the proposed candidate traits, and to see if the personnel or their researchers report on the adaptive success of the candidate traits or the adaptive failure of the opposing or nonexistent traits. Personnel selection criteria can be used to support arguments in favor of or against the adaptiveness of a candidate traits, and the history of personnel success or failure that was used to create the selection criteria can be used as a modern simulation of ancestral selective pressures. Pre and post expedition/habitation personality change studies can be used to examine the formation process of candidate traits, and trait malleability. Diary entries and interviews can be used to examine the detailed logic and first hand experience of forming an adaptive trait, or failing to adapt.

If a candidate trait proves to be adaptive for the same environmental adaptive challenges in both modern personnel and indigenous groups, and real time formation is witnessed of such trait, then a strong case for causation and generalizability can be made for that candidate trait being a universal adaptive mechanism to that particular environment. Thus the candidate trait's presence within a modern population is highly likely to be as a result of adaptation to that ancestral environment. This methodology may be useful for all ranges of ancestral environments, from deserts, to savannahs, tropics, steppes, coasts, islands, forests, mountains, etc. The full exploration of various ancestral ecological psychologies would yield developed theories for desertism, tropicism, mountainism, and so forth.

[4] The differential intensity and recency multiplier is currently just a conceptual aspect of the TEE model and has no developed measurement metrics. Users of the TEE model should be aware of these factors and weigh it subjectively for now. The specific East Asian branch of the TEE model used in this paper will not include the differential intensity and recency multiplier for now, and only refer to ancestral ecologies encountered.

Arcticism theory would be defined as the first principles of human psychological adaptation to arctic/subarctic/antarctic environments. It uses the proposed TEE methodology for modern populations that inhabited Arctic environments in their TEE migration path, to examine which notable traits of this modern population might be a result of adaptation to ancestral Arctic environments, and not to their presently inhabited Holocene environments.

Methodology

In order to speculate on which distinct adaptive traits may be present in both the modern East Asian descendants of paleo-arctic populations, and contemporary indigenous arctic populations, a cross cultural study is conducted comparing qualitative and quantitative cultural, sociological, and psychometric data from East Asian and Inuit psychology and sociology literature. Salient and consistently noted personality traits, especially ones specifically mentioned by Inuit studies scholars as arctic adaptive mechanisms, are selected as candidate traits for possible arctic adaptation. A case for the epistemic soundness of such an ethnographic analogy is made in the following section.

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Traits that are observed in real time to form, provide evidence for overweighting a conscious learning and behavioral adaptation explanation of Arcticist trait origins, and underweighting natural selection, exaptation, and genetic drift explanations. To test predictiveness of proposed Arcticist adaptations in achieving adaptive success to Arctic and Antarctic environments, we examine the history and studies of polar personnel selection criteria developed by various national arctic programs, examine if the candidate traits are reliably predictive enough of adaptive success to craft entire national polar personnel selection criteria upon.

Inuit and East Asians

There is a strong case for the epistemic soundness of referring to Inuit populations as an ethnographic analogy for exploring how the ancestral population of modern day East Asians may have adapted to the late Pleistocene Arctic Eurasia. Inuit[5] are the indigenous peoples who traditionally inhabited the arctic and subarctic regions of North America, Northeast Siberia, and Greenland. We primarily utilize Inuit studies

[5] In this paper, many older references use the outdated term “Eskimo” to refer to Inuit. “Inuit” is translated as “the people” in Inuktitut language.

literature, due to the higher amount of ethnographic literature published in English. Indigenous Arctic Siberian populations are just as epistemically valid, and their studies are included when available.

In the same vein that pre-OoA EEA models uses modern African foragers like the Hadza as their ethnographic analogy due to the African bush environment being similar to humanity's early ancestral environment, we can use Inuit as East Asians' paleo-ancestral ethnographic analogy, as they traditionally inhabited Arctic climates, are genetically closer to each other compared to other major world populations (Lazaridis et al., 2014), and have identical physical morphology plausibly indicating a shared or convergent evolution to similar environmental adaptive pressures.

The generally cold climates of the LGM and post-LGM Arctic, biological principles of human temperature tolerance, general hunter group dynamics of large game hunting, and human physical capabilities are constant throughout time and can be soundly extrapolated back into Paleolithic arctic history. The limited ways of interactions between these variables allows us to narrow down the range of plausible behavior and adaptation of ancient humans to the paleolithic Arctic to within an epistemically sound range.

According to paleoclimatic records, arctic and subarctic Eurasia was even colder during the LGM than modern times (Miller et al., 2010). It would be biologically impossible to survive the extreme cold without utilizing similar tools and habitation techniques Inuit use, such as animal fur parkas, and tents or igloos. Archaeological evidence dating back ~28 kya at the Yana River site in Arctic Siberia supports this backwards extrapolation, finding large amounts of fully-articulated animal remains suggesting they were hunted for heat preserving pelts and furs, and finding puncturing awls and sewing needles for creating fur clothing and footwear (Pitulko et al, 2012). For dwelling conditions, the snowstorms and winds of the paleolithic arctic would necessitate the same kind of prolonged, confined, close quartered, indoor isolation that modern Inuit face, and thus paleolithic arctic people would likely have faced identical challenges of adapting to these arctic habitation dynamics.

Extrapolating back the Inuit's interdependent arctic hunting dynamics is supported by archaeological findings dating back 45 kya of mammoth and wolf bone remains scarred with hunting wounds in Arctic Siberia (Pitulko et al, 2016). The various interpersonal dynamics and environmental survival skills of contemporary arctic hunters discussed later in this paper would undoubtedly be near identical to that of paleolithic arctic hunters for the same adaptive purposes.

Mammoth tusk engravings at the ~28 kya Yana site appear identical to contemporary indigenous Siberian anthropomorphic designs (Pitulko et al, 2012), suggesting high continuity of culture and lifestyle from Paleolithic times to modern times, making a strong case for the epistemic soundness of our Inuit to Paleolithic ancestral East Asian ethnographic analogy.

The soundness of this analogy is further supported by evidence of similarly narrow ranges of behavior and habitation methods observed in modern polar personnel. Even when they venture into Arctic climates with the latest technologies and luxuries, they still have to live in similar manners to traditional Inuits- in isolated, small dwellings, forced into close quarters confinement by lethal arctic winds or storms that can last for weeks. Expeditioners and skiers even more so, dragging around sleds and hunkering down in small mobile tents, utterly interdependent on their small team, being isolated far away from other humans in a lethal and punitive environment. This will be examined at length later in the paper.

Distinctness of Arcticist traits

Although to truly gauge which personality traits are distinct amongst Inuits, East Asians, and other ancestral colder climate peoples, one would need to conduct personality studies of every major climate zone ethnic group on earth using cross-culturally valid personality measurement instruments, and systemically review the anthropological literature, a task currently unfeasible due to incompleteness of data, invariance issues in personality measurement instruments, and current aggregator databases like the D-Place lacking personality traits as a variable. In absence of such a database, distinctness will be roughly determined by what cross cultural research is available. Global stereotypes will also be referenced due to high replicability of stereotype accuracy. How consistently notable a trait is when mentioned by anthropologists may help distinguish the distinctness or a higher intensity of practice from the normal spectrum of universal forager traits, and absence of consistent notability of such traits within the literature of other climate groups will be taken as a rough proxy of it's "indistinctness" or an expression level within the global norm. However, as some prominent Inuit anthropologists like Jean Briggs specialize in one particular group, they may lack equal depth of knowledge of other climate groups in order to make a proper comparison of traits to determine what is notable amongst all groups.

In addition, the unsolved WEIRD problem (Henrich et al., 2010) affects the lens of western anthropology on examining Eastern and Inuit societies with unique western frames of reference, and the quantitative personality measurement instruments used to some unclarified extent. However, despite this incomplete state of data and measurement invariance issues in instruments, there are still substantial insights to be discovered from examining existing Inuit studies, East Asian studies, polar psychology literature, with the WEIRD disclaimer in mind. Prominent anthropologists may have a general enough knowledge about distinct ethnic groups to point out what traits seem to be notable as compared to the world population.

Many "distinct" traits noted are derivatives of foundational schemas like egalitarianism, harmony, reciprocal obligations, sharing, and cooperative autonomy- traits widely observed in indigenous foragers around the world (Lew-Levy et al., 2018), but likely expressed to higher levels of intensity with more severe natural and social consequences in order to meet the adaptive challenges to the exceptionally harsh arctic climate. There is neurobiological evidence to suggest that demanding climates, but not temperate climates, increase phenotypical plasticity of Big Five personality traits (Fischer et al., 2018).

Although these traits could be adaptive for agriculturalists as well, the secondary purpose of comparing non-agriculturalist Inuit with modern East Asians is to examine if certain distinct traits and their noted intensity may have been prominent within the population before the Holocene adoption of agriculture in mainland East Asia.

What makes the arctic environment distinct from other common forager climates is the omnipresent lethal cold that exacerbates the consequences of mistakes or social exclusion, a blinding snow glare, a deceptively featureless visual environment, a lack of vegetation and near total dependence on hunting success, high isolation, unstable grounds, detachable ice floe grounds, lethal blizzards that prevent hunting and necessitate hunkering down in confined spaces for days or weeks on end (Nelson, 1969), unusual day night cycles, and a environment cold enough to naturally freeze and preserve food for long term storage.

Briggs (1991) describes arctic conditions as dangerously uncertain, deceptive, and everchanging. Most distinctive Inuit traits seem reflective of the unique adaptive challenges of the arctic.

> “In the physical world of the Arctic, hazards include treacherous weather and deceptive landscapes. Wind and temperature continually alter travel conditions; ice can break up under one’s feet and the ground disappear altogether in a “whiteout” caused by blowing snow. The markers one needs to find one’s way are subtle and complex, and the appearance of the land changes radically from season to season, by day and by night, when the moon is present and when it is not. ... all the game on which Inuit depend is mobile. Hunters must know how to find it, must guess where to follow it, and until recently they had to figure out how to manage when a species disappeared altogether in a given season or year. Substitute sources of native food are hard to find in the Arctic; famines and related catastrophes like epidemics, which could kill an entire population of dogs, were common occurrences until the late 1950s or early 1960s.” (Briggs, 1991)

> "Kayak hunting and ice hunting share the fact that the hunter is operating on a moving surface. Unlike solid land it is a permeable surface through which he may pass rapidly and disastrously. Not only is the surface on which the Eskimo may spend some one-fourth of his life constantly moving, it also lacks the gross complexity of most other geographic zones. The visual cues are small, consisting of subtle changes in the color of the ice, of small patches of snow which reveal wind direction and force, of water texture and slight indications of tidal changes and currents. Even these minimal cues may be obscured by fog, snow, wind, rain, glare, darkness, and low level contrasts that camouflage the animal as well. The anxiety levels generated by this rigorous life have serious implications for the community as a whole." (Nelson, 1969, p. 14)

To start the search with a clear overall framework of general personality traits of the two groups, I refer to literature reviews and general summaries of personality done by prominent Inuit and East Asian studies scholars. Reviews by prominent Inuit studies anthropologists suggest high consistency and generalizability of Inuit behavior, personality, and socialization patterns across most Inuit tribes in the far northern hemisphere (Berry, 1971; Briggs, 1970; Nelson, 1969).

Inuit personality is generally summarized in Inuit studies literature as emotionally controlled, calm, deferential, harmony seeking, pragmatic, reserved, non-confrontational, self sufficient. (Berry, 1971; Draguns et al., 2000; Hippler, 1974; Hsu, 1961). Those familiar with East Asian studies might recognize this pattern to resemble a crude stereotype of East Asians as portrayed in western anthropology and media. It is no mere coincidence that two populations thought of as culturally and sociologically distinct are not only morphologically identical, shared the same late Pleistocene EEA, genetically close, but are also generalized to portray similar personalities, social dynamics, and cultural values.

This phenomenon would be difficult to explain within previous theoretical frameworks of eastern psychology that involve attributing such traits to Confucianism, Buddhism, Bushido, agriculturalism- given the Inuit have no history of such influences. However, if we were to examine this problem with the TEE model, we can see a shared EEA that can act as a hypothesis to examine if these shared traits are a result of arctic adaptation.

Assuming epistemic soundness of the Inuit ethnographic analogy, we will go through the prominent traits of Inuit as noted in literature and examine their adaptive purpose in Arctic environments, and examine if such traits is also present and salient in modern East Asians, to create a list of candidate traits for plausible arctic adaptation that can be tested later for real time causation in modern polar psychology.

Candidate traits for Arcticism

Although these traits and values somewhat overlap semantically, or a value being a subdomain of another (Emotional control as a subdomain practice of Harmony), due to them being singled out by the anthropological literature, we will examine it on their terms, organized by saliency in literature. Most East Asian samples are either Chinese or Japanese, due to their prominence in Western anthropology and the sparseness of studies from smaller societies like Mongolia or Vietnam.

1. Emotional control/suppression

Inuit

The most prominent trait as noted by western anthropologists in Inuit populations is the value and practice of emotional control/restraint/suppression. The canonical text of Inuit ethnography is aptly titled *Never In Anger* (Briggs, 1970), a book chronicling a western anthropologist's two year stay with a traditional Inuit family in the Arctic and her social ostracization due to violating the Inuit core principle of emotional suppression and harmony. Excerpts from the book emphasize the importance of this trait.

Maintaining calm and even temperedness as sign of maturity:

> "Emotional control is highly valued among Eskimos; indeed, the maintenance of equanimity under trying circumstances is the essential sign of maturity, of adulthood. The handling of emotion is thus a problem that is of great importance also to the Utku themselves." (Briggs, 1970)

As universal law amongst Inuit:

> "... the rule of even-tempered restraint does apply to all categories of people (except for the smallest children); and deviations from that rule are very likely to attract disapprobation, regardless of how common such deviations are." (Briggs, 1970)

Regarded as inscrutable by western anthropologists:

> "Most other Utku were so well controlled that my untutored eye could not detect their emotions" (Briggs, 1970)

Positive feelings and their expressed are inhibited in favor of reason as well:

> "Though, ideally, concern (naklik) for others is good and commendable, nevertheless, among adults other values and feel- ings conflict with affection, inhibiting both the feeling and the expression of tenderness. One such conflicting value is that placed on reason (ihuma). Adults are expected to keep their feelings under the control of reason. The physical display of affection among adults is considered unpleasant (hujuujaq) to see, and the very feeling of affection (naklik, unga), when too strong, is derogated because it is painful for the person who loves." (Briggs, 1970)

Only gratitude allowed expression:

> "Characteristically, the Utku kept well under control whatever negative feelings they may have had. Gratitude was the feeling they expressed openly." (Briggs, 1970)

Emotion researchers point out the adaptive challenge of sticking together as a deeply interdependent group in the harsh arctic climate in order to survive, and the resulting adaptation of anger suppression for the sake of social harmony (De Leersnyder et al., 2013). Rash acts out of anger can also easily turn fatal for oneself and others, in an environment of extreme consequences. Unsurprisingly, researchers notice the similarities of East Asian cultures and Inuit in anger suppression for the sake of harmony.

> "In contrast, anger appears to be highly undesirable in interdependent relationships because it may threaten relational harmony; in that sense, East Asian contexts may be similar to the Inuit context described before." (De Leersnyder et al., 2013)

Reviews of Inuit ethnographies confirms the generalizability of this trait amongst the various populations, in Siberian Nenets, Canadian, Alaskan, Greenlandic groups (Draguns et al., 2000), in Algonkians, Athapaskans (Hsu, 1961), and in Slave groups (Berry, 1971). However, in addition to suppressing emotions for harmony, there is also some evidence that such suppression is also due to distrust and unwillingness to expose vulnerabilities in a lethally harsh environment (Hippler, 1974, p. 460). The harshness of the climate itself likely generates some degree of negative emotion like irritation or anger, which would require further suppression.

East Asians

Scholars have commonly theorized the practice of emotional restraint in Eastern cultures to be traced to Confucianism and its Doctrine of the Mean "Zhong Yong". Emotional control, restraint, and suppression of predominantly negative emotions for the sake of social harmony has been a consistently noted trait in East Asian psychology literature. Anger avoidance and suppression was especially noted in reviews of cross cultural psychology (Markus and Kitayama, 1991). A MMPI test on 1791 Han Chinese participants, summarized the results as "Chinese people have some character traits that are utterly different from those of Westerners. For example, Chinese are emotionally more reserved, introverted, fond of tranquility, overly considerate, socially overcautious, habituated to self-restraint, and so forth. These character traits are not only manifested in the test results but are also corroborated by the daily lives of Chinese people." (Song, 1985). A higher tendency of emotional suppression in East Asians compared with Europeans was consistently replicated in studies on adults (Wei et al., 2013), and on children (Ip et al., 2021). Studies suggest East Asians have higher emotional suppression even compared to other collectivist societies like Latin Americans, shown in university students (Ruby et al., 2021), and in preschoolers (Kim et al., 2023). Ethnographies suggest non-agricultural pastoralist Mongolians also regard emotional suppression as a core value that people learned in childhood. (Michelet, 2002, p. 248).

Neuroscientific studies further support this theme, in an EEG study by Murata et al. (2013), East Asians and European Americans were asked to suppress their emotions after viewing a visual trigger, both groups initially showed an equal amount of parietal positivity, but subsequently East Asians showed significant decreases in LPP while European Americans showed nearly no decrease in LPP.

2. Harmony/Cohesion

Inuit

Harmony is a common value in many forager groups, in Inuit societies, it is enforced with taboos, regulations, and cultural structures designed for maintaining and enforcing harmony and it's subdomains-

cohesion, conformity, non-confrontation, unassertiveness, mildness, acquiescence, politeness, and easy laughs as social lubricant and aggression dampener. As noted by Inuit studies anthropologists:

> "A similar ideal of harmony, forbearance, and charity applied to relationships with all people. One should help anyone who required it—at least a little. One should be mild, sociable, and, of course, never under any circumstances angry or resentful." (Briggs, 1970)

> "Occasionally there were tensions among close kinsmen as well, but these, when they existed, were even more strenuously denied and rigorously controlled. To the superficial eye, harmony reigned within Pala's family circle. No discord was ever communicated directly or indirectly to the anthropologist in the house." (Briggs, 1970)

Harmony and it's various stringent enforcement methods is a group survival adaptive mechanism to solve several adaptive challenges in harsh environments, with the intensity of enforcement and its degree of importance likely dependent on how harsh or scarce the local environment is (Draguns et al., 2000). As generalized across Inuits in cultural guides by Pauktuutit (2006), a leading indigenous Inuit advocacy organization, one main adaptive challenge is the low success rate subsistence hunting, which necessitated meat sharing and high interdependence amongst arctic families. Another adaptive challenge was coexisting in small, close knit camps with minimal privacy.

> "However, due to the small size of the camps, people had little privacy and were in frequent contact with all other community members. As well, there was a great degree of interdependence among people, based upon both social and economic realities. This interdependency and intimacy meant that when someone broke one of the social rules, everyone in the camp would soon know about it. Since people had little contact with others beyond the immediate group, they would be highly sensitive to open disapproval. Perhaps food would not be shared as readily, or an invitation to go hunting would not be extended. As a result, these informal methods of social control were very effective in maintaining the basic peace and harmony of the group and in ensuring that people generally behaved in accordance with community expectations." (Pauktuutit, 2006, p. 16)

Unlike most forager climates, Inuit often have to endure lethal blizzards and storms inside crowded and confined spaces for weeks on end.

> "In a situation where people were forced to live very close to each other, at times for extended periods, attempts were made to minimize points of conflict and abuses of others' rights." (Pauktuutit, 2006, p. 41)

Non-confrontation/conflict avoidance is widely noted as well. Often a victim of smaller infractions would just ignore the situation, avoid confrontation, and hope the problem would go away (Pauktuutit, 2006). It is also reported to prevent escalations that often lead to killings (Graburn, 1969). Unassertiveness was noted as a "one of the most striking characteristics" of Inuit (Briggs, 1970), assertiveness and self promotion were discouraged by the group (Draguns et al., 2000).

> "To a kapluna observer one of the most striking characteristics of Utku and, I think, of other Eskimos, is an absence of self- assertiveness. In contrast to many kaplunas, most Utku adults and children over the age of three or so (except for those who have been exposed to kapluna schooling) seem to blend unobtrusively into the social background. This quietness may be partly due to a dislike of volatility and noise; children are told to go out when they play too noisily in the vicinity of adults; or they are warned that their exuberance may give them nightmares. It may be due partly to the sanctions on aggressiveness, and to the habit of withdrawal in the face of fear (ilira)." (Briggs, 1970)

Mildness, acquiescence, and gentleness was noted as salient traits.

> "Regardless of the quality of the men who had arrived, regardless of how the Utku felt about them, they treated all alike with the same obliging acquiescence with which they had treated me on my arrival. Their courtesy did not fail even when the kaplunas took advantage of their mildness to treat them in ways that I considered most humiliating." (Briggs, 1970)

Modesty, humility were noted as traits of mature adults, to minimize jealousy from others and spare them from feeling inferior, for the sake of maintaining good relations with those they were deeply interdependent on (Pauktuutit, 2016).

East Asians

Harmony has consistently been noted as the core of Eastern social principles, philosophies, and cosmologies. Harmony as a principle was documented well before Confucius, in the writings of Shi Bo, a scholar-minister of the Western Zhou who praised its practice by even earlier sage-kings. Later it was built upon and spread by Confucius, stating harmony was not only a virtue to regulate family, social, and state level relations, but was regarded as the supreme cosmological ideal, in which Humanity had to coordinate and work with Earth and Heaven to create and maintain harmony throughout the universe (Li, 2008). Harmony is a theme noted in every aspect of Eastern societies, from the names of the ceremonial centers of Imperial China (Hall of Supreme Harmony, Central Harmony, Preserving Harmony), to a common political catchphrases in modern domestic and international Chinese political discourse "a harmonious society", to informal community mechanisms that shame, reprimand, ostracize offending individuals back into harmony.

On the subdomains of Harmony; non-confrontation/conflict avoidance is a commonly reported trait of East Asians, well documented in conflict management studies in management sciences. (Morris et al., 1998; Nisbett, 2003). Unassertiveness is a noted trait amongst East Asians, in interpersonal dynamics and communicative strategies, documented in leadership and cultural mismatch studies in management sciences. It is noted in Eastern culture as a trait that maintains group stability, and famous Eastern proverbs reflect the idea "The nail that sticks out gets hammered down." (Lu et al., 2020).

Mildness and gentleness as traits was promoted by Confucius as among the traits a "Junzi" meaning a man of virtue, should embody. It could be cultivated by consciously implementing the Doctrine of the Mean. These traits had great influence on Chinese aesthetics philosophy, with its style reflected in classical poetry, literature, art, and music (Yuan, 2022). Modesty and humility was noted as ideal traits in texts dating back to the pre-Confucian Zhou dynasty (Yuan, 2022), in the classic I Ching "Book of Changes", Modesty/Humility is noted as the 15th hexagram. Humility was noted by personality researchers to be a core value of Asian-Americans, common enough to be used as one of the few scales of proposed Asian American values measurement instruments (Kim et al., 2005). In cross cultural personality studies, East Asians reported higher Modesty and lower Self Enhancement compared to Westerners. (Kurman and Sriram., 2002).

3. Indirectness

Inuit

Indirectness is a core principle of Inuit social dynamics when one wants to make a request of another, of goods or a desired action. It must be done in the most subtle manner with hints and vague words, and

strategically positions the other party so that an equally subtle indirect refusal would not lose them face or create hard feelings (Briggs, 1970).

Inuit cultural organizations summarize this phenomenon:

> "The value placed upon a person's independence affects the way requests are made between Inuit, even in social situations. Since direct requests are considered rude and aggressive, a guest may make their wishes known only by making indirect hints about what they would like. A direct request would be seen as placing the guest in the lesser social position and would insult the host for not having had the insight or consideration to perceive the wishes of his guest. It also risks placing the host in an awkward position if he is not able to fulfill the desire of his guest or did not feel comfortable in granting him his request. This oblique way of making requests allows the host to refuse a request indirectly by pretending not to get the hint or to simply ignore it. Direct refusals are also considered aggressive and rude." (Pauktuutit, 2006, p. 41)

Informal leadership arises within tribes by this indirect method:

> "In essence it was accomplished by men acting in concert with "no one being boss." But this normative statement actually hides the operation of such events. In reality if a man wished to initiate activities which demanded the assistance of his peers, he would raise the question by indirection, never forcing a yes or no answer and thus, in addition to not putting another in a difficult social position of refusing, also saved his own feelings from the disappointment of a negative response. By a series of subtle and indirect references within a community, all the individuals relevant to a given project could be made aware of the forthcoming event, and if it were done subtly enough, no one would ever have to openly admit that he even knew what was being suggested." (Hippler, 1974, p. 461)

Self serving demands are indirectly hidden under the guise of altruism for another, or as a demand made by another, or for the well being of the demanded party:

> "So great is the embarrassment of refusing and being refused that requests are, as a rule, made most indirectly; if one wishes to ignore the hint one can do so. But in my own experience when requests were made they were usually of such modest proportions: a handful of tea, a lampful of kerosene, half a cup of sugar, that I, at least, found it impossible to refuse without feeling ashamed. Perhaps this was the petitioner's intent. Very frequently, moreover, the responsibility for requests is attributed to someone else. One may say, "So-and-so told me to ask" (assuming a cloak of docility—a Good quality), or: "I ask because so-and-so is cold" or "hungry" (presenting oneself as generous and thoughtful). Appeal on behalf of a small child is particularly effective. Inuttiaq frequently used concern for me as his excuse for making a request, a maneuver whose true character it took me some time to recognize. Being himself cold, he would say to me, "You are cold; make yourself some soup." He knew well that when I made it he would be offered some, but as the soup was mine, and I at best a pseudo-daughter, he was reluctant to ask directly." (Briggs, 1970)

This indirectness is likely another way of maintaining adaptive harmony within a highly interdependent tribe by non-confrontationally making requests, and sparing others who are naturally obligated to share and comply from creating a harmony disturbing direct refusal. It is a form of social grace within these tight knit circles, and has been noted as far as the indigenous Saami of Scandinavia (Balto, 2005).

East Asians

Indirectness is a well known trait of East Asian communication strategies, well documented in business, linguistic, diplomacy, sociological, and cross cultural studies (Nisbett, 2003). It is a method to communicate while preserving group harmony, reputation, and to save face for both parties. (Sanchez-Burks et al., 2003). A wide variety of indirect linguistic devices are commonly used in Eastern languages- honorific speech, vagueness, ambiguity, negative and interrogative forms, addressing a person via reference instead of direct address, passive voice utterances, verbal and non-verbal hedging, and others. (Ciubancan, 2015).

Studies have consistently shown East Asians to be more indirect in their communications than Westerners. East Asians were shown to be more attentive to indirect cues in work settings (Sanchez-Burks et al., 2003), more likely to look for indirect meaning and speak indirectly than Americans (Holtsgrave, 1997), far more likely than Americans to use indirect refusal methods, avoidance formulas like hesitation and pausing, and mitigation formulas (Kwon, 2004).

The Japanese traditionally utilized the communication and negotiation method of "Haragei", an indirect, intuitive way of gauging emotions and nonverbally communicating to minimize conflict and risk of embarrassment. (Goldman, 1994).

4. Higher self consciousness and social consciousness

Inuit

Inuit are described as highly sensitive to criticism, shame, and ridicule, and make quite an effort to appear likeable and benign in the eyes of others. Self conscious emotions like shame is universal and another harmony related adaptive mechanism, as social exclusion or social devaluation in a highly interdependent survival group could easily mean starvation, insecurity, abandonment, or death (Sznycer et al., 2018). Quantitative studies of shame intensity in Inuits compared to world populations are yet to be done, but anthropologists have repeatedly described Inuits to be "quite sensitive to public criticism" (Pauktuutit, 2006, p. 20) with a "heightened sensitivity to slights and ridicule" (Draguns et al., 2000). Inuit studies scholars have also attributed this heightened social and self awareness to the avoidance of another's rage, which necessitated being highly aware of other's emotions and intents, and whether one's own acts and wishes would be approved by others (Hippler, 1974). A heightened ability to perceive the slightest and most subtle emotional states, intonations of voice, and facial expressions have been noted as well, a necessary skill for a society that highly suppresses emotional expression (Pauktuutit, 2006).

This hyper-social and self awareness is taken to even higher intensity in the practice of empathic forbearance, where an Inuk in pain or sorrow may downplay, deny, or omit their suffering to a concerned person in order to spare them the burden of worry or vicarious sadness. This has been reported to even cause difficulties in treating Inuit patients, as they may not report their pain levels or ailments accurately in order to spare the staff from worry (Briggs, 1970).

Shyness was also a notable trait of Inuits, amongst stranger and even within their own tribe. They call it "kanngu", a sense of self consciousness and shyness that marked a child's maturity and acquisition of reason (Briggs, 1970).

East Asians

East Asia is known generally as a shame based collectivist culture, with moralization training in childhood primarily involving shame (Fung, 1999), with a high lexicon of shame related terms in language (Li et al.,

2004), and higher awareness and intensity of self conscious emotions (Marsella et al., 1974). On studies done with the Self-Conscious Emotion Questionnaire, East Asians showed significantly higher shame intensity than Westerners (Thomas et al., 2020). Interestingly, it has been noted that the newer generations of post-globalization East Asians may be more individualistic and in some studies was reported to be experiencing less shame than Americans (Tang et al., 2008). The authors of a study with similar results noted that the findings were surprisingly contradictory to the established literature and empirical data collected from the previous decades (Zhuang and Bresnahan, 2017).

A heightened ability and tendencies to gauge others' emotions and subtleties of expression and intonations is widely noted in East Asians. Japanese communication and negotiation relies heavily on "Haragei" translated as "Belly talk" where people mutually gauge each other's feelings and points of view in an indirect and subtle manner, conversing through vague and ambiguous phrases, reading subtle tones of voice, facial expressions, body language, and innuendos, to minimize the impact of refusal, disagreement, or embarrassment (Goldman, 1994). Koreans have a similar "Nunchi", translated as "Eye measure", referring to the subtle art of tactfully reading other's emotions and underlying intents behind vague phrases or unspoken words, a sign of emotional intelligence and one of the core skills in communication (Kim, 2003). Some ethnographic evidence shows that Mongolians, who are neither Confucian nor agriculturalists, also practiced the skill of reading physical cues to gauge true feelings of other parties (Michelet, 2022, p. 246).

Empathic forbearance has been noted in East Asians, as a review of coping studies concluded Asians are less willing than European Americans to explicitly ask others for support (Kim et al., 2008). Asians were found to be significantly more likely than African or Latin American students to use forbearance as a coping strategy, despite them all being categorized as collectivist societies. (Moore and Constantine, 2005).

5. Reserve/Introversion

Inuit

Inuits have been reported to be notably reserved, insular, with a strong sense of privacy (Briggs, 1970; Nelson, 1969). A Big Five personality study done by Draguns et al. (2000) showed that the Nenets were more introverted than the European Russian subjects. From the limited Inuit studies literature examined so far, there has been no proposed adaptive mechanism from Inuit studies scholars, but in modern Polar Psychology literature it has been commonly described as an adaptive necessity in modern arctic personnel, likely to maintain an integral sense of self and inner sanctity in a highly confined and close knit social group, while bracing against a hostile external environment.

East Asian

East Asians tend to be significantly more reserved and introverted than most other world populations, scoring the lowest on Big Five Extraversion levels compared to the rest of the world regions, including South and Southeast Asia (Schmitt et al., 2007). Other psychometric tests corroborate this stereotype, in a study comparing the MMPI records of Chinese and Japanese students with Non-Asians, they were found to exhibit more social introversion (Sue and Sue, 1974). Studies have shown East Asian students self reporting significantly higher shyness than European students, especially in the classroom and where it affected participation levels accordingly (Paulhus et al., 2002). In a study where Chinese and American students were asked to rate the stereotypes of their own group and the other group, both groups rated Chinese as more introverted, less open, and more emotionally controlled (Bond, 1986).

6. Cautiousness/Risk aversion

Inuit

Inuits were described to be extremely cautious and risk averse, to meet the adaptive challenge of surviving in an uncertain environment described as "unstable and dangerously problematic" (Briggs, 1991), living a "life of unbuffered risk, in which the alternative to correct action might be death. Most of the risks discussed here were still very much living realities in the “modern’ camps in which I lived, despite the incorporation of Western technology.” (Briggs, 1991, p. 260).

Kleinfeld (1973) notes "Eskimos, especially males, have been socialized into extreme caution before making a judgment. The hunter is taught never to take risks, never to call out a hasty evaluation because the penalty can be swift death not only for himself but also for others who rely on his decision (Nelson, 1969). Error may result in humiliating social ridicule." Inuit carefully studied weather, water current, ice conditions and even astronomy before ice hunting, as a poor prediction of ice or water movement can leave them stranded on breakaway ice to starve to death in the middle of the arctic waters. The best hunters were characterized as "the most cautious, alert, and intelligent" (Nelson, 1969). Inuit carefully calculated risk before engaging in hunts on the open ice.

> “This brings up another characteristic of Eskimo mental attitudes, that of foresight. Although foresight is not demonstrated in all realms and all activities, it is usually important in hunting and in any situation of immediate potential danger. Thus they will not travel out onto the sea ice in winter if there is any chance of being set adrift on a loose floe. They also pass by herds of walrus which are in thick pack ice, where the crew might be trapped after an hour or two of butchering, if the ice should close around them. And they will not take unnecessary chances or "fool around" under any circumstances, as exemplified by the fact that none has ever demonstrated to me the method of walking on thin ice, except on a completely safe surface. The Eskimos seem to have an unspoken concept of "percentage risk." Thus a certain activity might be done without danger eight out of ten times, but because of this 20 per cent risk the Eskimo seldom carries on the activity as long as it can be avoided. It seems that the western idea of doing things for the excitement of taking a chance rarely occurs here.” (Nelson, 1969, p. 414-415)

They are generally noted as not actively seeking novelty, complexity, or change, and are content with a repetitive, monotonous way of life (Draguns et al., 2000).

East Asians

Risk propensity is generally noted in Big Five personality studies to be constructed of the sequence of higher Extraversion and higher Openness which creates the motivation for risk seeking, low Neuroticism which minimizes the anxiety of possible negative consequences, low Agreeableness which disregards the guilt of social consequences, and low Conscientiousness which bypasses the forethought of deliberation, control, and conformity (Nicholson et al., 2005).

Compared to other world regional populations, East Asians are noted to be self-reportedly the lowest in Extraversion and Openness which would dampened the initial motivation to seek risk, highest in Neuroticism which can cause excessive anxiety and analysis paralysis about consequences, surprisingly low in Agreeableness which wouldn't aid in risk taking without the initial risk motivation of high Extraversion and Openness, and lowest in Conscientiousness which the authors note as likely biased by cultural modesty in self reporting and contradictory to qualitative evidence that rank them as highest

(Schmitt et al., 2007). It is therefore sensible to generalize East Asians as tending to be cautious and risk averse.

7. Pragmatism/Practicality

Inuit

Inuit were consistently noted to be pragmatic and "legendary" (Kleinfeld, 1973) at practical innovation by using and recombining various objects in the arctic to meet practical needs, often taking advantage of the extreme cold to freeze combinations of items into ingenious unconventional solutions.

> "The Netsilik Inuit, lacking wood, made sled runners by cutting their summer tent of caribou hide in half, wetting the pieces, wrapping each half around a line of fish laid head to tail, and freezing the whole. Then they fastened the runners together with crossbars of caribou antler, lashed with thongs of sealskin. In the spring, when the sled thawed, they took it apart, ate the fish, sewed the tent back together, and moved in." (Briggs, 1991, p. 263)

Their pragmatic worldview summarized as:

> "In other words, the world of objects can be imaginatively reshaped at a moment's notice, and any materials available, traditional or modern, can be incorporated and utilized to serve present needs in the most practical way, without regard for tradition, ritual, authority, or possible future needs." (Briggs, 1991, p. 263- 264)

It is likely such pragmatism and practicality is to meet the adaptive challenges of the scarcity of materials, and to improvise quick solutions to resolve novel and dangerous problems that often occur in the everchanging and uncertain arctic (Bates, 2007).

There is some evidence of Inuit being adept at process and efficiency improvement, Nelson (1969) noted Inuit are "experts at finding shortcuts in labor expenditure..." in order to conserve the valuable commodity of energy and eliminate wasteful inefficiency in various activities ranging from traveling to hunting logistics.

East Asians

Pragmatism and practicality has long been noted as distinctly Eastern values. Practicality is described as one of the main features of Chinese ethics and Confucian philosophy, with a focus on practical education and finding pre-theoretical practical solutions to moral problems, rather than defaulting to religious or theoretical guidelines (Wong, 2023).

East Asian statecraft is frequently noted for its practicality and pragmatism, from Deng Xiao Ping's economic reform catchphrase "It doesn't matter if a cat is black or white, as long as it catches mice.", to Singapore's predominant Pragmatist ideology (Tan, 2012), to Japan's Meiji Restoration's pragmatic policies (Huffman, 2003) to those of their modern day leaders (Pyle, 2006), to the Mongol Empire's general state building and religious policies (Bedeski, 2018).

In a study using the AVL Economics scale, Chinese heritage college students scored significantly higher on measures of practicality and pragmatism as compared to European heritage students (Wink et al., 1997).

8. Perseverance/Endurance

Inuit

Inuit scholars frequently note mental and physical perseverance as an important attitude of the Inuit, committing and persevering in completing tasks thoroughly. Nelson (1969) notes experienced hunters can "perform difficult tasks over long periods of time with a minimum of discomfort" and corroborates the higher intensity of this trait in Inuit "In these and many other ways the Eskimo perseveres far beyond what would be expected of an outsider."

> "The Eskimo also perseveres at almost any task until it is successfully completed. He is not likely to give up and become unhappy if conditions are difficult. Eskimos seldom turn back once they have set out, regardless of how tough the going may become. But they are wise and prudent enough not to begin traveling if there is much danger involved. They are seldom anything but thorough in the completion of a task, for they realize that if the job is not done fully, it may well cause more work in the long run." (Nelson, 1969, p. 413-414)

Stoic endurance of prolonged discomfort and pain was also a valued quality, a likely adaptation to the adaptive challenge of living in extreme cold that is at best, irritating to exposed faces, and at worst lethal. Nelson (1969) notes "In addition to this physical stamina there is another quality which is as much mental as physical and which might be called "toughness." The Eskimo views prolonged exposure to cold, wetness, or extreme physical exertion with a different frame of mind than most non-Eskimos, and seems much less affected by it." Polar storms and blizzards that pin people inside for days or weeks, preventing them from hunting, would necessitate stoically enduring both the lethal environmental forces one had no power over, and the frequent starvation pangs that would accompany it. The logistics of arctic hunting also required long arduous treks in subzero temperatures to track down and hunt game, or to sit patiently still in uncomfortable positions for hours on end waiting for seals to emerge from breathing hole traps (Nelson, 1969).

Inuit engage in pain endurance games, most infamously the "ear pull", where contestants tie a string connecting each other's ears and pull in opposite directions until the string comes loose, one gives up in pain, or becomes too injured to continue (Nanda and Warms, 2013). Bleeding and stitches are reported to happen. Such games are noted to prepare the youth for the rigors of arctic living and to test one's own pain endurance capacity.

East Asians

In East Asia perseverance and endurance are important traits taught in childhood that scholars regard as core values in Confucian teachings, traits to be reinforced by parents, teachers, and the children themselves. This cultural view was reflected in a study comparing US and Chinese preschoolers' construal of the learning process of a children's story protagonist, and results showed the US preschoolers were more aware of the ability, task attempt, and strategy used, whereas the Chinese preschoolers were more aware of the learner's persistence, diligence, and concentration (Li, 2004).

The Chinese concept of "Chiku" translated as "eating bitterness" is a core cultural value of stoic endurance of suffering and persevering through hardship. In Japan the spirit of "Ganbare" which translates to persist or persevere, is taught from as early as infancy, and the word is commonly used as a phrase of encouragement for a person to persevere until the end (Taylor et al., 1997). A similar term

"Gaman" meaning stoic endurance or tolerance is widely used, and people are expected to embody it at work, sports, school, and cultural rituals like endurance competitions "gaman taikai" where participant display gaman through pain endurance acts, for example, soaking in ice water during wintertime (Light, 2016). These values taken to an extreme likely contribute to the modern notably East Asian phenomenon of death by overwork, known as "Kwarosa" in Korea, "Guolaosi" in China, and "Karoshi" in Japan.

9. Flexibility

Inuit

Flexibility is a repeated theme in descriptions of Inuit culture and native philosophy. They tend to keep plans loose and prepare for constant unplanned and nonstandard situations that arise, finding rigid planning and expectations to be impractical and foolish (Bates, 2007; Draguns et al., 2000).

Anthropologists propose the Inuit's flexible attitude is an adaptive mechanism to the perpetually uncertain conditions of the arctic, an adaptive challenge experienced even by modern ecologists whose orderly pre-planned fieldwork methodologies failed in the face of the everchanging arctic weather, which propelled them to switch to flexible, rapid-response style methodologies they noted as similar to the Inuit's (Bates, 2007).

This flexibility is present in their informal justice traditions as well, as no rigid universal laws are applicable to identical conflicts and situations (Graburn, 1969). Each case is judged and treated differently according to the situation and circumstances, taking into account the relative status, power, and personalities of those involved (Pauktuutit, 2006), for the primary objective of maintaining harmony within the group (Koperqualuk, 2015).

East Asians

East Asians' flexibility in planning and forecasting has been noted in Western business guides, that describe contracts as an "unfolding continuum" that they believe merely sets the basis of a business relationship, and not any rigid structures to narrowly follow. It is common to continually adjust the terms of a contract as the relationship progresses and new developments unfold. (Ubilla, n.d.; Nisbett, 2003)

Eastern legal systems are characterized by flexibility as well, as Nisbett (2003) summarizes:

> "In the West, the goal is satisfaction of a principle of justice and the presumption going into the arena of conflict resolution is typically that there is a right and a wrong and there will be a winner and a loser. The goal in Eastern conflict resolution is more likely to be hostility reduction and compromise is assumed to be the likely result. Westerners call on universal principles of justice to push their goals and judges and juries feel obligated to make decisions that they believe would hold for everyone in approximately similar circumstances. In contrast, in the East, flexibility and broad attention to particular circumstances of the case are the earmarks of wise conflict resolution. As a citizen of prerevolutionary China put it: "…A Chinese judge cannot think of law as an abstract entity, but as a flexible quantity as it should be personally applied to Colonel Huang or Major Li." (Nisbett, 2003)

Minkov et al. (2018) studied the values parents teach their children across 54 countries, in which they measured cross cultural differences in flexibility, defined as how malleable, capable, and desirous of positive self transformation the populations are- and found that East Asian countries ranked at the most flexible end of the monumental/flexibility spectrum, compared to the rest of the major world regions.

However, this definition of flexibility deals with personal character and not the aforementioned ecological and chronological epistemology, and it is unclear if the two factors influence each other.

10. Heightened Visuospatial abilities

Inuit

Inuit have unusually high visuospatial abilities, frequently reported in qualitative ethnographies and in quantitative psychometric tests. Kleinfeld (1973) notes that Inuit have an extraordinary ability to navigate across the most featureless, visually uniform arctic landscape by memorizing subtle details of the terrain- an adaptive mechanism to survive in a visually difficult environment.

> "The ecological demands made by a particular environment together with a group's cultural adaptations to these demands may stimulate the development of particular types of cognitive abilities (Berry, 1971). For thousands of years the Eskimos' economy has been based on hunting in the Arctic. The Arctic, in contrast to urban areas or farmland, is an environment of extreme visual uniformity. As Laughlin (1970) describes it: The horizon is commonly flat with minor relief. There are no trees or forest canopy. The visual cues are often small, consisting of subtle changes in the colour of the ice, of small patches of snow which reveal wind direction and intensity, of water texture and slight indications of tidal changes and currents. The available cues are obscured and diminished by fog, snow, wind, rain glare, darkness, ice, and low level contrasts that camouflage the animals as well [p. 9]. That Eskimos have made a highly successful adaptation to the demands of arctic hunting is evidenced by their ability not only to maintain the group but also to expand geographically. The Eskimos together with the closely related Aleuts inhabit the longest distance of any people in the world (Laughlin, 1970)" (Kleinfeld, 1973, p. 343)

Kleinfeld (1973) details the adaptive purpose of specific figural abilities- visual shape rotation, spatial scanning, visual configuration analysis, visual memory.

> "A number of other figural abilities may be critical to the Eskimo hunter. For example, he must be able to recognize rotated visual patterns since he may return to an area from a different direction. Spatial scanning is important in selecting a clear path for sled and dogs through terrain broken with rough ice piles. The hunter must be able to analyze or break down complex visual configurations, for example, determining if an ice boulder is composed of the rounded ice pieces on which it is safe to camp or the sharp pieces which may break apart under him. In short, to survive in the Arctic, the hunter must continually be aware of, be able to recall, and be able to evaluate figural information. Such environmental demands are rarely made of urban Caucasians and for them attention to figural detail could even be dysfunctional." (Kleinfeld, 1973, p. 344)

Berry (1971) notes the Inuit's visual recall ability was significantly higher than other ethnic groups, being far more able to detect and remember slight variations in the visual environment with detail despite having equivalent visual acuity. Inuit language also contributes to visuospatial proficiency- there are many prefixes and suffixes that don't exist in english, which specifies shape and location to succinctly communicate the various subtle yet critical differences of objects and terrain in the arctic (Kleinfeld, 1973). The critical education culture also reinforces visuospatial proficiency, as young hunters who get lost are harshly ridiculed by elder hunters (Nelson, 1969, p. 424).

On visuospatial psychometric tests like Kohs Blocks, WAIS' Block Design, Block Assembly, Morrisby Shapes, Inuit were reported to have scored on par with elite Western students despite having far less formal education, or even significantly higher with the same educational background (Kleinfeld, 1973).

East Asians

Several researchers have reported that East Asians have a higher visuospatial ability than other ethnicities (Nisbett, 2003; Kleinfeld, 1973), even when controlling for socioeconomic status in studies where East Asian children outscored European, African, and Latin American children on visuospatial tests (Lesser et al., 1965). For the few scholars who noticed that East Asians shared a similar ancestral environment as Inuit, they speculated the higher visuospatial ability to be an adaptation to ancestral cold selection and arctic hunting (Armstrong et al., 2014).

This historical pattern in psychometric testing is further supported by a fMRI study by Goh et al. (2011) comparing cognitive processing in visuospatial tasks between East Asians and Westerners. East Asians were found to have significantly faster mean response time on a coordinate task that both groups performed equally well on. Responding to greater task difficulty, Westerners had higher neural engagement in occipital, parietal, and frontal areas, and higher suppression of the default network, indicating a more challenging cognitive experience.

11. Big Five personality traits

Inuit

Quantitative Big Five personality studies on Inuit populations are sparse, the only one found at the moment is a Russian NEO-PI-R study by Draguns et al. (2000) comparing 80 ethnic Nenets students with 80 Russian students. The Nenets group averaged higher Neuroticism, lower Extraversion, lower Openness to Experience, and insignificant differences in Agreeableness and Conscientiousness compared to Russians. The authors attributed the differences to the harsh arctic seasonal lifestyle that leaves little room for exploration and curiosity, and also due to various colonial and modernization influences by Russia.

East Asians

In the "The Geographic Distribution of Big Five Personality Traits" study by Schmitt et al. (2007), when compared with Eastern Europeans as a proxy for Russians, East Asians were also found to have higher Neuroticism, lower Extraversion, lower Openness to Experience, but also notably the lowest Agreeableness and lowest Conscientiousness compared to all world regions. The authors note the latter two factors contradict national stereotypes and qualitative evidence, and stated the possibility of the study being detrimentally confounded by response styles, high East Asian modesty, and other biases.

Although both Inuit and East Asians seem to have higher Neuroticism, lower Extraversion, and lower Openness, the current sparseness of Inuit quantitative personality studies, and issues of measurement invariance, confounding variables, and biases with Big Five personality instruments, make comparisons too lacking in data and instrument precision to be conclusive.

12. Epistemologies

Inuit

Inuit scholars generalize the Inuit worldview as dangerously uncertain and constantly changing (Briggs, 1991), and the resulting epistemology as theoretically unknowable, with the degree of knowability of an

observation characterized by its immediate practicality. This view is generalizable as far out as the Sami in Northern Scandinavia (Ingold and Kurtilla, 2000). Briggs (1991) notes that this worldview reflects how Inuit live within the physical environment of the Arctic:

> "I have said that Inuit regard the world as a place where little can be taken for granted, where answers are not fixed and nothing is ever permanently knowable. At the same time, they consider it potentially knowable and usable from moment to moment. One manifestation of this orientation is a tendency to look at both people and objects in terms of multiple and shifting qualities and uses, instead of freezing them with labels into Entities and focusing attention on one or a few fixed attributes or uses to the exclusion of others. ... A pragmatic willingness to try any and all possible solutions to a problem will make one's observations and conclusions more useful. Constant openness to possibilities is facilitated by maintaining a skeptical attitude, a realistic uncertainty concerning the meanings of one's own observations and those of others." (Briggs, 1991, p. 262-266)

East Asian

Eastern views of the universe and the world tend to see it as constantly changing, cyclical, impermanent, non-linear, and contradictory (Nisbett, 2003). Chinese epistemology has historically been characterized as primarily concerned with the pre-theoretical (Wong, 2013) pragmatic, practical application of knowledge, rather than attempting to seek fixed truths and abstract theories (Nisbett, 2003).

This is likely heavily affected by the WEIRD perspective, as most indigenous epistemologies are non-theoretical and mostly practical in application of knowledge. Practicality over abstract theory, holism, harmony, resonance, respect for all living things- supposedly "Eastern" concepts that have been attributed to Confucianism, Taoism, or Buddhism, are common within various indigenous groups around the world (Imafidon et al., 2023). It is likely that Eastern civilizations retained many indigenous forager ways of thought, further shaped by arctic ecological conditions, and are far more similar to the non-WEIRD indigenous groups around the world than Western anthropologists may think.

Establishing Causation

Although several of the candidate traits exhibit high similarity between Inuit and East Asians, we cannot just assume such traits in East Asians is caused by ancestral Arctic adaptation, as a shared trait may have been coincidentally caused by Holocene factors, as result of genetic drift, exaptation, or other factors. To avoid utilizing "just so stories", like earlier narratives of ecological psychology sometimes do, I conduct a systematic review of modern Polar Psychology literature to test for causation of Arctic environments necessitating and naturally selecting for our candidate traits of Arctic adaptation, to explore if the proposed Arcticist traits are considered adaptive in modern polar expeditions, and to examine evidence of such traits or values "forming" in real time for modern personnel and expeditioners who adapt to polar climates, either in the Arctic or the climatically similar Antarctic.

Modern polar station and expedition environments are an adequate simulation for paleolithic arctic life. Ideally there would be studies on modern non-Inuit personnel attempting to live life exactly as traditional Inuit would, subsistence hunting in the arctic to survive, living in skin tents and igloos, herding reindeer, without the aid of modern technology and supply chains. However, due to the extreme risk of such a lifestyle, there are no studies found yet where modern non-Inuit attempt to live in such an exposed

indigenous manner. For a simulation most similar to indigenous hunting travels and exposed life, we use studies on modern expeditions where participants ski or sled across polar environments, living off of carried food supplies, and sleeping in temporary camping tents.

Studies on personnel who live in reasonably comfortable modern stations with heating, medical care, food supplies, clothing, transportation, modern communications technologies, and recreational equipment (Mocellin et al., 1991, p. 30), can still simulate the confined dynamics of paleoarctic "winter overs". Modern inhabitants still have to endure prolonged confinement in their dwellings during the harshest parts of winter, although always with adequate food and heating.

We can take the evidence of adaptive success and failure in modern polar personnel, as a simulation for how paleolithic arctic peoples may have naturally selected for Arcticist traits, or the ability to learn and adapt Arcticist traits. But instead of dying out in the cold, modern failure is buffered by technology and medical evacuation, with those failing to adapt either being rated low by peers and supervisors, not returning for another expedition, or being medically evacuated out of the station or camp via plane. Such simulation of a paleoarctic natural selection process allows us to see how Arcticist traits may have survived and retained into modern East Asian populations.

A confounder that make it tricky to clearly see how polar climates affect modern migrants is that of the personnel selected for arctic/antarctic service tend to be carefully sifted through a selection program and are generally more bold, risk taking, and sensation seeking explorer types (Burns and Sullivan, 2000, p. 44). It is difficult to get a control group of generic civilians to live in an environment as risky as the arctic. Such a selected group makes a comparison to indigenous inuit or paleolithic people tricky to do. These are the difficulties of testing for causation in the historical sciences. Nonetheless, this methodology is far more epistemically valid than the "just so" stories that comprise the predominant models of Eastern psychology (aside from studies like Talhelm et al.'s (2014) rice farming collectivism study).

A notable limitation is that sample sizes in polar psychology tend to be far smaller than typical urban studies, as the risk of the polar environments, the personnel capacity of polar stations, high costs, logistical difficulties, tend to reduce the subjects available for study to a far smaller amount than in urban or hospitable other areas. Even with less than ideal replication conditions of paleolithic arctic life, changes in personality are observed in these personnel, and adaptive challenges are discussed and recorded.

As noted earlier, this paper is an introduction to the incomplete and ongoing Arcticism project, and only an introductory review of prominent polar psychology literature and reviews is used, as a total systematic review is highly labor intensive and still underway. For now, literature reviews by leading polar psychology researchers are used to support generalizations and observations made here.

Introductory Review of Reviews

Literature reviews by leading polar psychology researchers consistently highlight a specific set of personality traits that predict optimal polar adaptation and performance as measured by supervisor and peer ratings during polar expeditions. These traits c, summarized as emotional stability (defined as emotionally stable, calm, even tempered), task ability (hard working, persevering, motivated, industrious even under extremely adverse conditions), and social compatibility (likeable, considerate, friendly, harmonious) (Gunderson, 1974). This set of traits is considered "The most robust set of findings to emerge over the past five decades of selection research" (Steel, 2015, p. 364). Other frequently noted Arcticist traits include introversion, low assertiveness, flexibility (low need of order).

The arcticist pattern of traits appears generalizable across adapted polar personnel of all nations studied. As Sandal (2002) corroborates in a cross-cultural study of generalizability of personality testing amongst Antarctic expeditioners, when compared to normative non-polar student samples, polar personnel from Norway, Great Britain, and Australia were reported to all have similar traits as measured on a PCI test, and scored lower on undesirable traits for confined living (Sandal, 2002).

Rothblum's (1990) review of various polar studies finds adaptive traits semantically equivalent to several of our Inuit/East Asian candidate traits.

> "Paterson (1978) assessed selection criteria for successful Antarctic winter-over service for men at a British station. The British Antarctic Survey regularly selects men for 2-year rather than 1-year tours of duty, and thus selection becomes particularly important. Based on previous research on positive adjustment, selection criteria have focused on the ideal candidate as introverted, reserved, trusting, intelligent, self-sufficient, independent, and forthright (Paterson)." (Rothblum, 1990, p. 256)

> "Biersner and Hogan (1984) concluded that Individuals with high needs for novelty and new sensations, whose thoughts and actions are routinely unconventional, who are emotionally unstable, or who are unconcerned with social approval seem unsuited for work in such environments regardless of their technical competence. The opposite is true for those who adjust well. (p. 495)" (Rothblum, 1990, p. 258)

The results of primary studies tend to be congruent with the Arcticist traits found in the literature reviews (Burns and Sullivan, 2000; Sharok, 2020).

Trait malleability

In addition to the various personnel selection criteria favoring the general pattern of candidate Arcticist traits proposed by our Inuit/East Asian analogy, there is substantial evidence of trait malleability in an Arcticist direction when a person attempts to adapt to polar climates. The general adaptive challenge faced by Inuit and paleolithic Arctic peoples is identical to the one faced by modern polar expeditioners (minus the modern technologies and starvation risk)- that of surviving as a heavily interdependent group within isolated, confined dwellings for prolonged periods, necessitated by the extreme climate conditions of polar winters (Boag, 1952, p. 2). The group must initially have adaptive traits, or be able to learn, adopt, or intensify the necessary traits in real time, in order to survive and function in such an environment. This documented process of personality change can act as evidence to test and prove causation in Arcticism theory, that successful adaptation and survival in polar climates necessitates initially having Arcticist traits or needing to adopt or intensify these traits in real time.

Some reviews remark that no "significant" differences found in personality after a polar trek (Barabasz, 1991), it is important to note that polar personnel generally are already selected according to Gunderson's (1974) criteria traits of emotional stability, task ability, social compatibility, the semantic equivalents to the core candidate traits of Arcticism. Most polar psychology studies currently found on trait malleability show some amount of personality change in an Arcticist direction after participants endure a polar winter-over experience.

A 16PF study done on 15 men at Halley Bay station before and after winter showed their group mean scores becoming more reserved, less assertive, more private, more group dependent, and more self disciplined and controlled (Paterson, 1978).

Taylor and Shurley (1971) conducted 16PF studies on 10 men at Scott Base, and 8 men at South Pole station. After 1 year, the Scott Base participants became more emotionally stable, less expressive/more taciturn/restrained/introspective, more trusting, more imaginative, more private/shrewd, and less apprehensive. After 10 months, the South Pole participants became more assertive, less expressive/more taciturn/restrained/introspective, less rule conscious, more self sufficient, more self disciplined and controlled, and more relaxed/patient.
Taylor (1973) conducted a 16PF study of 93 people in five successive years, 65 of whom were winter parties consisting of participants selected according to Gunderson's (1974) emotional stability, task ability, social compatibility criteria, staying for a year at Scott Base or Lake Vanda station in the Antarctic, and 28 of whom were milder summer parties consisting of mostly senior university students staying for 2 months at Ross Dependency. The scores for the combined winter parties for before and after the year showed them becoming more emotionally stable, less bold/more shy, less sentimental/more utilitarian, less imaginative/more practical, more self sufficient, more self disciplined and controlled. The scores for the combined summer parties for before and after 2 months showed them becoming less expressive/more taciturn/restrained/introspective, less rule conscious, more socially bold, less imaginative/more practical, more private/shrewd, less apprehensive, less open to change, less self sufficient, less self disciplined and controlled, more tense and impatient.

Formation process

Koscheyev et al. (1992) conducted a 16PF test on 9 Soviet participants before and after a 90 day Arctic ski trek, and found the participants to have become more reserved, more emotionally stable, less assertive, slightly more taciturn/restrained/introspective, more trusting, less imaginative/more practical, more private/shrewd, more self sufficient, more self disciplined and controlled, and more introverted. This study stood out as one that required participants to take psychometric tests during every leg of the trek, allowing us to see the formation process of arctic adapted psychology. The author documents:

At the first parachute drop of supplies, the participants struggle to adapt, adopting Arcticist mechanisms of reducing conflict, increasing introversion, reducing assertiveness, and increasing emotional gauging.

> "Difficulties had appeared in the assessment of the social situation, and notions about a behavioral style necessary for mutual understanding had become blurred. Because of the peculiarities of thinking, the range of stimuli causing emotional reactions narrowed, probably as a form of psychological defence. Contacts among the participants became more superficial, in an attempt to lessen interpersonal conflicts and to reassess the significance of such conflicts. The participants seemed to become more apathetic and indifferent to what was happening around them. ... The participants had also become more anxious and tense, with doubts about their endurance. At the same time, there was a marked tendency to block aggression, with a diminished desire for dominance and competition, and an enhanced attention to emotional nuances in contacts with other team members. This last change helped to lessen tensions between members of the expedition. On the whole, deviations in psychological data from population norms were greatest at this stage of the expedition, implying a maximal stress upon the mechanisms of psychic adjustment, and a nadir of effective functioning."(Koscheyev et al., 1992, p. 84- 86)

No data for second supply drop. At the third supply drop, participants gain some degree of comfort and confidence, becoming more dominant, sociable, and decisive.

> "... the psychic state of the participants was characterized by much lower levels of anxiety and tension, with greater self-confidence and a disappearance of the previous tendency to magnify difficulties. However, the concern about physical health was unabated, and there was even an

> increased tendency to use physical complaints in order to escape unwanted duties. Other features at this stage were dominance, aggressiveness, independence and an inclination to leadership. The participants became more sociable, less distant and less alienated. They made decisions with greater ease, and no longer had difficulty in choosing the best options." (Koscheyev et al., 1992, p. 86)

At the fourth and fifth supply drop, participants become calmer, less expressive, more conformist, less impulsive, more restrained, more thoughtful, and less assertive.

> "The psychic state progressively optimized over the later legs of the journey, corresponding to the fourth and fifth supply "drops" with most of the test scores returning towards population norms. Anxiety and tension were further alleviated, the features of hypochondria were less evident, and activity of the sympathetic nervous system was apparently optimized. The team members were now less demonstrative, cared less about external effects of their behavior, and ceased to use physical complaints to influence the actions of their associates. In general, behavior became more "proper", with a tendency to conformity. Impulsivity, lack of restraint and thoughtlessness were less characteristic, the background mood improved, and aggressiveness, independence and a tendency for leadership were less expressed." (Koscheyev et al., 1992, p. 87)

After the completion of the trek the participants' personality measures ended up heavily Arcticist leaning.

> "Their behavior was better controlled, and they were less irritable and impulsive. Adherence to social norms and rules of behavior had increased, the planning of activity and emotional control were optimized, and there was a reduced probability of disorganization in stressful circumstances. This final stage of the mission was marked by a further decrease in dominance and aggressiveness, and attention was increasingly focussed upon the emotional nuances of interpersonal relations. At the same time, the need for group interaction and peer support diminished to its lowest level. However, manifestations of anxiety and tension were greater than during the final stages of the journey" (Koscheyev et al., 1992, p. 87)

Such documentation of the formation process of a proposed set of ancestral ecologically adapted traits can be considered evidence that is more epistemically sound and precise than most kinds in the current state of ecological psychology. For example, establishing sound causation of rice farming causing higher collectivism would necessitate psychometric tests conducted on individuals from non-rice farming cultures before they start their rice farming career, retested during fixed intervals, and finally after a predetermined concluding period, to see if higher collectivism is formed through each stage, and if results quantitatively and qualitatively match the adaptive challenges of rice farming.

Failure to adapt

When testing Arcticism theory using studies of failed adaptation to polar climates, the failed or low performing subjects tend to display traits that lean in the inverse direction of Arcticist traits.

Leon and Venables (2015) reported on a case study of a failed Arctic ski expedition in which the dyad participants had to abort the mission early due to severe frostbite to extremities. Both participants were regarded by the authors as high risk taking, high boldness, fearless, and overconfident on their psychometric tests, scoring well below the mean on Harm Avoidance, and Constraint. The author remarks how these cavalier traits led to them neglecting specialized training despite neither of them having polar ice trekking experience. They also failed in building cohesion, coordination, conformity, and harmony, which led to them often proceeding in an uncoordinated manner, with one subject often going further ahead than the other, leaving both in dangerous isolated circumstances. The author concludes their

overconfidence and lack of caution directly impacted their ability to adapt effectively to the polar environment.

Taylor (1973) reported in a study of 65 men in Antarctic winter parties, the 16PF scores of 11 men considered to be poor performers were noted to be less self sufficient, less emotionally stable, more imaginative/less practical, and lower on tough-poise than well performing groups. They were qualitatively described to be bad tempered, inconsiderate, selfish, sloppy, and unmotivated in their work.

Koscheyev et al. (1992) conducted a 16PF study and found that after a 90 day ski trek, the participants with the low success compared to ones with high success tended to have the inverse of Arcticist traits- reportedly being far less reserved, less deferential/more assertive, less taciturn/introspective/restrained, far less conforming/rule conscious, far more sentimental/less utilitarian, more apprehensive, and excessively self sufficient and perfectionist.

Despite the lack of standardization of methodology and instruments through the decades of Polar psychology research, the majority of studies and reviews currently reviewed have findings that converge onto highly similar results as proposed in our Inuit/East Asian analogy, that being the adaptiveness of a higher tendency of Emotional Control/Suppression, Harmony/Cohesion, Indirectness, higher Self/Social Consciousness, Reserve/Introversion, Cautiousness/Risk Aversion (confounders discussed later), Perseverance/Endurance, and Flexibility. There was mixed evidence for Pragmatism/Practicality, and inadequate testing for visuospatial abilities. No matter the study, at least a portion of these traits are mentioned as adaptive, either as an exact match or a semantic equivalent (e.g. social compatibility meaning the same as our Harmony/Cohesion trait).

Replication and Formation of specific candidate traits

This section examines the specific candidate Arcticist traits in the context of modern polar psychology, if it shares the same adaptive challenge as Inuit, what failure to adapt looks like, the formation process if available, if the authors propose the same adaptive mechanism, and the various evidence of replication amongst modern polar personnel.

Note that these traits are salient terms from Inuit ethnographies used in our Inuit/East Asian analogy and are organized according to saliency in Inuit studies literature, not for optimal categorization. Many of the study results provide supporting evidence for multiple traits at once.

1. Emotional Control/Suppression

Emotional control/suppression consistently appears in polar psychology literature, seemingly generalizable across most polar expeditions. Kahn and Leon (1994, p. 671) remarks how repression is a commonly reported coping method with the stresses of polar treks on multiple studies. There is consistent replication and substantial evidence in polar psychology literature of the adaptiveness of this trait, making a strong case for Arcticist causation of Emotional control/suppression, generalizable to Inuit, modern East Asians, and extrapolatable back to paleolithic Arctic peoples.

Wagstaff and Weston (2014) notes on a emotions study of 12 Antarctic mountaineers about how emotions can fluctuate unpredictably between outdoor polar trek environments and monotonous indoor periods, and how polar expedition team leaders "indicate a substantial need to manage their emotions

during lengthy periods in close proximity with teammates". They elaborate on how the interdependency of teammates is accentuated in extreme environments, failure can be fatal for the entire team, and positive or negative emotions can contagiously influence the emotional states of other teammates.

Their post-expedition report notes how there was significantly lower social cohesion and perceptions of team performance on days when a teammate reported anger as their most prevalent emotion. Several participants expressed a specific preference for emotional suppression for the sake of harmony "happy families" and to avoid conflict. One goes into detail about the logic of suppressing emotions:

> "Conflict could be devastating... I can't afford to have an assassin in one of the groups poisoning the rest of the team. It's about honesty as well, but it's also about controlling your emotions and that's really important. I suppress my emotions a lot, when what I really want to do is go up and punch someone." (Wagstaff and Weston, 2014, p. 16)

The author was surprised at how despite emotional suppression being generally regarded as a maladaptive strategy in Western psychology and having a high mental fatigue associated with using it, the polar expeditioners still found it (along with acceptance) the most effective strategy for the critical sake of maintaining group harmony and task cohesion. This is congruent with findings from a meta-analysis of emotional regulation and mental health study by Hu et al. (2014) stating that expressive suppression was correlated higher with negative mental health indicators in Western cultural values than in Eastern cultural values. East Asians' lower correlation of expressive suppression to negative mental health indicators would be supporting evidence for this retained trait's historical success in dealing with the same adaptive challenges in the paleolithic Arctic as these modern expeditioners on their ski trek.

The adaptiveness of emotional suppression and related arcticist traits is constant across time, even in early polar personnel psychology studies, Boag (1952) notes in a study on Canadian Arctic settlements:

> "Usually it is not possible for the hostilities generated to achieve adequate discharge as many of the people concerned have heard enough about the troubles that may arise in these situations, to make them afraid of any discharge of hostility, so that their usual reaction is suppression, repression, and withdrawal from situations where trouble threatens to break out openly, as far as this is possible." (Boag, 1952, p. 3-4)

These adaptive challenges faced by modern polar personnel are identical to those faced by Inuit- surviving together in confined tents or igloos, and hunting or traveling together outside in the extreme polar environment. It is highly likely that Paleolithic Arctic inhabitants were subject to the same adaptive challenges, both from extrapolating these generalizable modern polar experiences back in time, and from observing the general personality traits of the modern day descendants of Paleolithic Arctic peoples, traits perfectly fitting for the arctic but possibly out of place in their current Holocene environment.

2. Harmony/Cohesion

The personnel's adaptive challenge of maintaining harmony and group cohesion is reported to be the same challenge faced by the Inuit, as polar winter often makes early evacuation and transportation logistically difficult if not impossible, thus modern polar wintering teams are isolated and confined to their station or trek tents in the same way Inuit are (Rothblum, 1990). Prolonged close quarters confinement also exacerbates any conflict by the enforced contact of the crew members (Boag, 1952), and causes crew members to lose their ability to put issues in perspective "goldfish bowl" and small conflicts can easily become disproportionate (Van Puyvelde et al. 2022). In the pre-internet era, wintering groups would be even more isolated and cut off from external communication and help. In such a typical

scenario, conflict within the group can easily be fatal for all members, not just due to danger of violence but also because each station crew had specialized skills like medics or technicians that can't be replaced in isolation (Steel, 2015), and thus, harmony/cohesion was the greatest priority for survival.

Reviewers of polar psychology note that "interpersonal conflict and tension is the greatest source of stress in polar expeditions" (Palinkas and Suedfeld, 2008), "traits that promote successful building and maintenance of interpersonal relationships are of primary importance" (Sharok, 2020), and "conflict-free interpersonal functioning was the priority of station personnel"(Rothblum, 1990).

Failure to successfully meet the adaptive challenge of harmony and cohesion was illustrated by Van Puyvelde et al. (2022) noting how a polar personnel failed maintain a sensible perspective on interpersonal conflict, wanted to escape his station, went out into the cold and was found the next morning with serious hypothermia. Leon and Venables' (2015) study of a unsuccessful dyad polar expedition shows adaptive failure as well, in which the teammates were poorly coordinated with low social cohesion, with one scoring significantly lower on agreeableness, often rushing ahead of the other, never mutually meeting expectations and resolving differences. The result was the other teammate got severe frostbite and had to abort the mission early. In the Inuit and paleoarctic world such failure of cohesion could spell severe injury or death for the team, especially without the aid of modern rescue and medical technology. The author remarked their failure of social compatibility:

> “The subjects were incompatible in many respects in regard to successfully carrying out a two-man expedition. The personality and values findings showed a number of similarities and differences that might have predicted significant problems in working together in a harmonious manner” (Leon and Venables, 2015, p. 569)

Consistent with Arcticist trait malleability, he noted the formation process of harmony/cohesion and collectivism, his interviewees described how they learned to put aside their own individualism and learned to reflect and behave for the sake of the group first. Collectivistic thinking was noted to have "evolved spontaneously and sometimes compensated for the encountered difficulties, both in station and polar trek missions." (Van Puyvelde et al., 2022).

There is consistent replication of the polar adaptiveness of Harmony/Cohesion and its subdomains, in the various case studies cited above and in polar personnel selection criteria (Gunderson, 1974). Thus a strong case can be made for Arcticist causation of this trait/value.

3. Indirectness

Indirectness is a subdomain of Harmony and Emotional control, and is not specifically measured or tested for in polar psychology literature. However, Boag (1952) mentions how a wintering team expressed hostility mostly in the form of indirect verbal expressions, and Gunderson (1974) notes how open expression of aggression was avoided but instead expressed indirectly through arguments about politics or similar issues. This adaptive mechanism is just a subdomain of the adaptiveness of maintaining Harmony, where direct aggression or confrontation is muted for the sake of group cohesion, but indirect passive aggression slips through to release repressed anger. There were no mentions found yet of indirectness in making requests, a common trait amongst Inuit and East Asians. Although there is currently inadequate quantitative testing and data, from the qualitative evidence noted above, a mild case for Arcticist causation of this trait can be made.

4. Higher Self and Social Consciousness

Higher self and social consciousness is a subdomain of harmony and cohesion, as living in a critically interdependent group where the dangers of misalignment, disfavor, or expulsion necessitates one to be aware of how they are seen in the eyes of others, and to have a heightened awareness of the emotional states of others whom one's life is dependent on. This is universal amongst humans to some degree, but likely intensified in highly dangerous environments where consequences are exacerbated and expulsion is guaranteed death. This adaptive challenge is arguably identical in the Inuit world.

Wagstaff and Weston (2014) noted that a polar trek participant would repetitively worry about conflict with another person and it absorbed a disproportionate amount of time and detracted his ability to focus. Another noted that the team became better at reading and understanding each others' nuanced behaviors, one participant became highly aware of his specific behaviors that teammates found frustrating and subsequently tried to avoid behaving that way. Several participants remarked the importance of self awareness on optimizing team dynamics, with one stating that "[teammate] wasn't very self-aware and he didn't understand how he impacted upon the team. Didn't seem to be able to take himself out of himself... Firstly you need to be self-aware, but then you need to have the tools to be able to act on it. If you're not aware that your behavior is upsetting people, you can't even start the process." (Wagstaff and Weston, 2014).

Kahn and Leon (1994) reported in an all women 64 day ski trek that concerns about self image in the eyes of teammates was the most common psychological stressor. Koscheyev et al. (1992) reported how a Soviet arctic trek team became more attentive to emotional nuances in interpersonal relations with teammates, and this tendency intensified through the completion of the trek.

In the polar psychology reviewed so far, there were no specific attempts to quantitatively measure self or social consciousness with tailored instruments like the Self Conscious Emotion Questionnaire used in East Asian studies. Some qualitative evidence supports this trait as Arcticist but due to sparseness of data and quantitative testing, at best a mild or moderate case for Arcticist causation can be made.

5. Reserve/Introversion

Reserve/Introversion and their subdomain privacy was also a consistently replicated theme in polar psychology, studies on trait malleability in polar personnel consistently replicate a shift towards Introversion, Reserve, and Privacy (Koscheyev et al., 1992; Kjærgaard et al., 2013; Paterson, 1978; Taylor and Shurley, 1971; Taylor, 1973). However it is unclear from the reviewed literature what the exact adaptive mechanism is, possibly a way to conserve mental energy in a demanding environment, a way to preserve inner sanctity and sense of territory in a confined close quartered social setting, a way to minimize chances of offending or stirring up conflict with excessive expression, or formed as a side effect of exhaustion from prolonged exposure to a cold and discomforting environment as Boag (1952) observed. Regardless, it is a salient trait amongst adapted modern polar personnel, Inuit, and East Asians alike. It is adequate evidence to make a strong case for Arcticist causation of this trait.

6. Cautiousness/Risk Aversion

Cautiousness is a sensible adaptive mechanism in one of the most dangerous natural environments on earth. Although many of those who would volunteer and be selected for polar expeditions tend to be the most capable, adventurous, risk seeking, bold types, and their risks are buffered by the luxuries of

modern technologies, food supplies, and medical evacuation vehicles in case of severe risk, there are reports that it only takes one death at a station to make all expeditioners more cautious in their behavior and outlook (Burns and Sullivan, 2000).

In Inuit camps, and especially paleolithic times without modern technology, there was a constant "high risk of human loss" and most Inuit including children have firsthand experience of a close one's death through accidents, illness, and childbirth (Briggs, 1991). Subsistence hunting in the arctic is noted to be highly risky and Inuit are expectedly described as extremely cautious and risk averse (Nelson, 1969).

Cautiousness was consistently replicated in polar personnel trait malleability studies as well (Koscheyev et al., 1992; Kjærgaard et al., 2013; Paterson, 1978; Taylor and Shurley, 1971; Taylor, 1973), using cautiousness measurement proxies like the 16PF's lower end of factor F Liveliness (Leeder, 2016) and the lower end of NEO PI R's Extraversion (Roccas, 2002). Polar veterans also scored lower than new arrivals on the Sensation Seeking scale (Suedfeld, 1991). Due to Cautiousness not being directly measured and having to defer to proxies that may have confounding facets within the main factor, at the current stage we can only make a moderate case for Arcticist causation of this trait.

7. Pragmatism/Practicality

Pragmatism and Practicality had mild replicability with some mixed results in the studies examined so far. In summary, we find a larger sample size of 93 polar personnel becoming more practical (Taylor, 1973), a sample of 9 Soviet polar personnel becoming more practical (Koscheyev et al., 1992), and a smaller sample of 10 men becoming more imaginative (Taylor and Shurley, 1971). No changes in practicality/imagination were mentioned in studies on 15 men (Paterson, 1978), or in 8 participants in a wintering party (Taylor and Shurley, 1971). However, regarding the 10 men that reported becoming more imaginative, the author notes their Scott Base party enjoyed better conditions than the isolated South Pole party, being in a milder winter location near ski slopes, the participants were able to enjoy outdoor activities, socialization with 196 personnel at nearby McMurdo station, as well as the arrival of a flight that delivered new personnel, mail, equipment, and provisions (Taylor and Shurley, 1971), which is a highly different experience than the typical isolated and confined winter-overs. Examining failure in adaptation, Taylor (1973) noted that the worst performers in winter parties tended to score higher on imaginative (less practical).

The original adaptive mechanism proposed amongst Inuit was the scarcity of material items, and the time and circumstantial constraints in the exposed Arctic that would necessitate quick practical innovations with whatever materials were available in the vicinity. This would not be a shared adaptive challenge for modern polar personnel, who are equipped with modern technology, equipment, and supplies. The only plausible explanation for some modern polar personnel's shift towards practicality is the monotony of winter confinement and work routines, which would arguably be a shared challenge in the Inuit world as well, and could explain the outlier Scott Base party who had minimal confinement and high socialization with nearby bases, and thus not becoming more practical (Taylor and Shurley, 1971)

Although the largest samples tended to move towards more practicality, this dual adaptive challenge of material scarcity and confined monotony for Inuit, can only be partially simulated for modern polar personnel, making proof of causation a tricky and incomplete task. At best, a mild case for Arcticist causation can be made at this point.

8. Perseverance/Endurance

Perseverance/Endurance is the semantic equivalent of Task Ability, one of the three ideal polar personnel traits standardized into widely used personnel selection criteria, defined as the willingness to work hard under extremely adverse conditions for the sake of meeting program objectives and assuring survival (Gunderson, 1974). These traits seem sensibly adaptive to meet the same adaptive challenges both Inuit and modern polar personnel face, that of enduring prolonged winter confinement, and the rigors of exposed polar treks- whether it is a multiday subsistence hunting trek for Inuit, or a ski expedition for modern personnel.

Although the selection criteria used by various national arctic programs already selects for those deemed high in perseverance/endurance (task ability), there is decent replicability of wintering or trekking experiences further intensifying these traits. Examining trait malleability studies using the 16PF factor Q3 Perfectionism as measurement proxies for industriousness and perseverance, we find a shift towards that trait in study samples of 15 people (Paterson, 1978), 8 people (Taylor and Shurley, 1971), 65 people (Taylor, 1973), and 9 people (Koscheyev et al., 1992). We only find a shift away from Q3 in a 2 month milder summer party consisting of 28 university students (Taylor, 1973). There is high replicability amongst wintering and exposed polar ski parties, which would undoubtedly require good endurance and perseverance to make it through winter confinement or a 90 day ski trek, circumstances unlikely to be as severe in summer parties for stationary university students. There is adequate evidence for the adaptiveness of Perseverance/Endurance in Arctic environments, especially since it's been adopted as a core trait in personnel selection criteria, which makes a strong case for Arcticist causation and selection of this trait.

9. Flexibility

Flexibility was noted as an adaptive trait amongst polar personnel to meet the same adaptive challenges that Inuit face- the unpredictable climate conditions that can cause unforeseen delays, breakdown of equipment, and absence of necessary supplies and parts. Individuals with lower conscientiousness who do not expect perfect schedules and linear industrious progress may actually do better in winter-overs if they are more flexible and adaptable (Palinkas, 2000). This challenge was also faced by Bates (2007) in an Arctic fieldwork expedition where his rigidly scheduled Western methodologies that assumed predictability of environmental conditions failed in the face of the unpredictable Arctic climate, and his team was forced to adopt a flexible, rapid response, Inuit-style methodology in order to complete their work. Rothblum (1990) notes studies suggest most personnel develop greater flexibility as a result of polar experiences.

However it is difficult to independently measure flexibility as the 16PF factors associated with flexibility, the lower end of Q3 Perfectionism, and the higher end of Q1 Openness to Change, have facets that are not the semantic equivalent of flexibility and sometimes the exact opposite meaning. Inuit are noted to be both strong willed, controlled yet flexible in their outlook on planning and environmental expectations, so if using Q3 Perfectionism scale, it would not only contradict flexibility and strong will which are on opposite ends of the scale, but also mix the descriptor flexible alongside descriptors of impulsive, undisciplined, careless of social rules, which would be not be Inuit Arcticist traits. The higher end of Q1 Openness to Change mixes the descriptor flexible with analytical, liberal, freethinking which also wouldn't be considered Arcticist traits. There are no suitable instruments used in these studies that can independently measure flexibility. Although there are no suitable quantitative studies measuring flexibility in polar personnel yet, there is highly detailed qualitative evidence (Bates, 2007) of Arcticist causation and

necessitation of flexibility in personnel adapting to polar environments. A moderate yet incomplete case for causation can be made.

10. Heightened visuospatial abilities

There were reports of modern polar personnel facing the same adaptive challenges as Inuit in the deceptive and monotonous visual landscape of polar environments (Van Puyvelde et al., 2022). Rothblum (1990) noted that blizzards, whiteouts, and lack of clear landmarks cause modern personnel to consistently fail in accurately estimating sizes and distances of objects, which they found irritating. Failed visuospatial judgement for Inuit and paleolithic Arctic peoples would be fatal selection pressures that naturally selected for those high in visuospatial ability, or the ability to learn and teach visuospatial ability. Unlike the Inuit world, the consequences of failed visuospatial judgement would be minimized for modern personnel who can call for evacuation by helicopter or snowmobile, and use modern navigation technology to compensate for a lower level of visuospatial ability compared to Inuit. In modern polar psychology literature examined so far, only one study by Yan et al. (2012) was found measuring visuospatial ability, finding an overwintered group to have significantly higher accuracy in a mental rotation task than in a newly arrived group. Although there is ample evidence of modern personnel facing the same adaptive visuospatial challenges as Inuit, due to inadequate testing and sparseness of data, we can only make a theoretically plausible case for Arcticist causation of heightened visuospatial abilities.

11. Big Five traits

From our Inuit/East Asian comparison, they both shared higher Neuroticism, lower Extraversion, lower Openness, but no similarity was found in Agreeableness and Conscientiousness, and Schmitt et al. (2007) noted East Asian low Conscientiousness measures were significantly impacted by modesty bias in reporting, so these last two factors are omitted from testing causation. The only NEO PI-R study found so far measuring pre and post expedition changes in Big Five traits was of a 12 person Danish patrol team in Arctic Greenland, finding that compared to first year novices, second year veterans of the patrol scored higher in Neuroticism, lower in Extraversion, lower in Openness (Kjærgaard et al., 2013). Using the 16PF trait malleability studies as a proxy (Koscheyev et al., 1992; Paterson, 1978; Taylor and Shurley, 1971; Taylor, 1973), we find no replication of higher Neuroticism (proxy facets low C, high O), consistent replication of lower Extraversion (proxy facets low F, high N), and consistent replication of lower Openness (proxy facets low M, low I). We have consistent replication of lower Extraversion, and lower Openness, enabling us to make a strong case for Arcticist causation of these two traits.

12. Epistemologies

Most interestingly, there was evidence of replicating Inuit and East Asian epistemology, proposed to be a reflection of their ancestral Arctic ecology, which saw the world as constantly changing, unpredictable, uncertain, theoretically unknowable, with knowledge characterized by immediate practical function. Bates (2007) described in detail his Arctic fieldwork experience of failing with methodologies based on western ecological epistemology, and the real time formation and success of methodology based on Inuit ecological epistemology. It is possibly the first account ever documenting real time causation and replication of Arctic (maybe of any) ecological epistemology, and deserves to be read in full:

> "During my fieldwork in Cambridge Bay, the problems that can occur in the Arctic due to commitment to a “plan,” and the comparative strengths of the Inuit methodology of dealing with the future, were perhaps most forcefully illustrated to me while I worked as both participant and observer on an ecological science project (Bates 2006). ... In dealing with the unpredictability

> inherent in ecological fieldwork on the Arctic tundra, the study's best-laid plans rapidly proved to be more of a hindrance than an advantage. The snows left late in 2003, meaning that there was no access to the tundra vegetation, which was crucial to the ecological project's commencement. This set the project schedule back by almost a month. Flights out of the community had already been predetermined, and the Arctic summer can be frustratingly short. This limited the period available for carrying out the detailed methodology required, forcing a restructuring of the timetable of work.
>
> ... Furthermore, the caribou themselves proved to be absent from areas that were crucial for the study's predetermined methodology, creating a brief panic and forcing a quick realignment of the project's goals. Commitment to a plan also proved difficult in other ways, as it dictated that activities were carried out on days that were rather unsuitable. On one memorable occasion the exposed hillsides on which we worked were blasted and drenched by heavy winds and sporadic downpours. This weather rendered the study's methodology, which at this point involved the delicate clipping and storage of the tundra vegetation, almost impossible. From the low hills on which we worked we could watch these storms approaching out over the ocean, as menacing slate-grey cloudbanks trailed by tendrils of torrential rain, yet we hunkered down and worked regardless. While the assistant and I quickly grew fed up and started to moan at our predicament, the project leader was admirably determined to get the work done, pressured ever by the predetermined schedule of work. Faced with the conflicting pressures of a chaotic Arctic environment and the desire for an organized scientific project, the ecologists showed considerable skill in shifting between two approaches, that of highly structured planning and that of rapid reaction and adaptation. During this process it became increasingly clear which was the more appropriate mode of operation on the tundra. Overall, the ecologists' work emerged not as the orderly implementation of a pre-determined methodology, but as a process of rapid response that bore a marked similarity to that preferred by Inuit. "The plan" seemed to trail along in the wake of this, shifting in response to actions taken rather than dictating them. Having to react in this way would seem to be an unavoidable consequence of working in such an unpredictable environment." (Bates, 2007, p. 94-95)

This experience of working in the unpredictable and uncertain Arctic environment was also noted to be an adaptive challenge by Palinkas et al. (2000), who stated polar personnel with high conscientiousness and low tolerance for plans gone awry may experience depression and decreased performance, as unpredictable weather conditions can cause delays in schedule, supplies and parts availability, and equipment failure. Those who are more flexible and adaptable to unforeseen limitations may be more ideal as winter-over candidates.

Studies on arctic epistemology are extremely sparse, but the ones found so far document in detail the formation process and the adaptive success of the proposed Arcticist epistemology in Western personnel, and the adaptive failure of Western epistemological methodologies based on assumptions of certainty, unchanging environmental conditions, and predictable schedules. Although more data is ideal, we can make a strong case for Arcticist causation of the proposed Arcticist epistemology found in Inuit and East Asians.

Results

The most consistently replicated candidate traits amongst the examined polar psychology studies with the strongest likelihood of Arcticist causation, in both studies of adaptive success and inversely in studies of adaptive failure are- emotional control/suppression (semantic equivalent of emotional stability), harmony/cohesion (social compatibility), perseverance/endurance (task ability), reserve/introversion, the Big Five traits of lower Extraversion and lower Openness, and Arcticist epistemology. Less mentioned yet

frequently replicated subdomains with strong likelihood of Arcticist causation were- shyness, unassertiveness, higher privacy, self discipline/control. Moderately to mildly replicated with a moderate likelihood of Arcticist causation traits include- higher self and social consciousness, indirectness, cautiousness/risk aversion, pragmatism/practicality, flexibility. Inadequately tested yet theoretically plausible Arcticist causation traits was a heightened visuospatial ability.

Arcticist traits appear to be generalizable across the scope of the examined samples' nationalities.

Predictiveness of Arcticist traits in successful arctic adaptation have not been thoroughly tested yet and requires more investigation. Although this project has not yet acquired or examined the data that was used to form various national polar personnel selection criteria, such criteria already use the core Arcticist traits which they define as emotional stability, task ability, social compatibility (Gunderson, 1974). However, Palinkas and Suedfeld (2008) note that initial pre-expedition measures of personality are weak predictors of performance and behavior as the differing situational factors of polar winter isolation, confinement, and available coping resources have a larger effect on performance. Perhaps baseline Arcticist leaning traits are not highly predictive of situational performance in the Arctic, as it's possible those with initial Arcticist traits can fail to maintain them when faced with the real stresses of polar winters, but as seen in the previous section, those who successfully adapt overwhelmingly show personality shifts toward Arcticist traits.

Despite this remark by Palinkas and Suedfeld (2008), which may only be valid within the scope of his predominantly European samples, testing predictiveness in modern East Asian samples suggests otherwise. If East Asians indeed retained ancestral arctic psychological adaptations, theoretically they should have an easier time dealing with polar expeditions and station life.

Although systematic cross cultural polar psychology studies on cognition, mood, and trait malleability have yet to be done, some existing studies support this prediction. Weiss et al. (2000) reported on a study of three Japanese Antarctic expeditions and noted that the wintering participants were generally higher in endurance, more motivated and arousal aversive compared to a North American group in the Arctic summer, despite Antarctic winters being far more demanding than Arctic summers. She also noted another Japanese study by Ikegawa et al. (1998) that reportedly showed Japanese personnel tolerating polar stations well, with no pathological depression in midwinter. Steel (2015) noted how stability of personality was found in the same two aforementioned Japanese studies and in another Chinese study. Kuwabara et al. (2021) examined a Japanese wintering crew with a Baum test and made an unprecedented conclusion that isolated polar winters may be easier to endure than life in Japan:

> "In order to adapt to collective life in Antarctica, a microcosm of society, one must suppress what is unacceptable to the group, to a certain degree. That also applies to life in Japan, and despite the severity of conditions in Antarctica, illustrations drawn there were more vibrant than those drawn in Japan. Wintering in Antarctica involves the austerity of leaving home and being isolated in a closed environment but at the same time team members leave the busy life and complicated social relationships of Japan behind. The adaptive directionality shown by the wintering team members suggests that Japanese society is more difficult to live in than the isolation of Antarctica."
> (Kuwabara et al., 2021, p. 10)

Discussion

In an abstract sense Arcticism is an adaptation to an ICE (Isolated, Confined, Extreme) environment, generalized by personnel studies scholars to encompass not only polar environments, but also deep space missions, submarine missions, and high altitude expeditions (Golden et al., 2017). One can imagine a similar survival situation if humans were living in a desert area with constant brutal sandstorms that necessitated hunkering down into confined tents for weeks or months on end, similar close proximity confinement social dynamics and emotional suppression adaptations may emerge. More research is needed to see how generalizable ICE adaptation is across non-polar environments around the world.

It's important to note that the Arcticist traits are just an intensified specific pattern of traits derived from foundational hunter-gatherer schemas, universal to a degree amongst foragers or even modern populations. Theoretically, if the generalizability of arcticism as shown in modern personnel studies is indeed universal, any forager group that migrate and successfully adapt to polar environments, whether it'd be Hadza, !Kung, or North Sentinelese, would see their typical forager dynamics of harmony, reciprocity, hunting virtues etc, all intensified and Big Five personality scores shifted Arcticistly to extreme ends of the scale to meet the adaptive challenges of the harshest and most punitive ecology on the planet.

Possible confounders that may affect Arcticist personality changes are salutogenic effects (positive psychological changes from overcoming challenges), temporary disorders like winter-over syndrome (cluster of sleep disturbance, impaired cognition, negative affect, interpersonal tension), Polar T3 syndrome (a seasonal hypothyroidism affecting cognition and mood), Seasonal Affective Disorder (depressive symptoms related to seasonal changes in daylight and darkness), Disturbed Sleep syndromes (difficulty sleeping, loss of REM sleep related to seasonal circadian rhythm disruption) (Palinkas and Suedfeld, 2008, p. 155). It is unclear whether these temporary disorders affect Inuit to the same degree, as reports of these syndromes are predominantly sourced from modern polar personnel literature. However, these may not be confounders but rather another typical ordeal of life in polar climates, that can be regarded as a part of the arctic adaptation challenge.

The only potential confounder that seem to affect only temporary inhabitants like modern expeditioners and not arctic natives, would be salutogenic effects of a unique life experience on a polar trek, which is related more to personal conquest and appreciation of unique scenery, and would be likely irrelevant to multigenerational native inhabitants of polar regions, who are used to dealing with such challenges. Furthermore, what has traditionally been deemed polar salutogenic effects is also affected by its own confounders, namely Arcticist adaptations such as increased hardiness and group cohesiveness, which is mixed in with salutogenic personal growth type effects like "Sense of personal achievement, Increased sense of humanity"(Palinkas and Suedfeld, 2008, p. 159). More research is needed to clarify the effects of these potential confounders, or to determine if they are even confounders at all.

Researchers have also noted that unlike pre-internet age, modern polar stations may be comfortable and packed with modern amenities to the extent that it can accommodate a wider range of personality types (Steel, 2015), and not just the hardy, stoic men of historical polar treks. Such advancement in modern station luxuries may be a confounding variable that affects the accuracy of simulating traditional Inuit or paleolithic arctic life. However, exposed polar treks on the ice that require participants to live in mobile tents and carry their own equipment is likely to stay relevant as a more accurate simulation of Inuit and paleolithic arctic life.

Although the TEE model requires looking back through the entirety of modern East Asian populations' migration and admixture history all the way to pre-OoA period, which would necessitate examining pre-LGM Eurasian steppe and southern route East Asia environments, the proper way to model of admixed ancestral environments is unclear, so we currently use a "generic" forager psychology model as a placeholder, likely valid due to the lower volatility and extremeness of pre-LGM steppe and warm subtropical coasts as compared to LGM arctic Eurasia.

The retention of Arcticist traits is likely higher in certain ethnic groups from Northeastern China, such as ethnic Manchus who may have left subarctic regions even later than earlier Han migrations due to their close geographical proximity to Arctic Siberia. However, no testing has been found yet on long term retention of arctic adapted traits in polar personnel, say 5 or 10 years after their polar expedition. There would likely only be retention if one grew up in or spent most of their adult life in polar climates, rather than a one time expedition.

No testing was found on the intergenerational transmission and inheritance mechanism of Arcticist traits. If it is similar to the partial heritability Big Five personality traits (Power and Pluess, 2015), it would likely be transmitted by mechanisms that are partially genetic, epigenetic, and parental/cultural.

Limitations

This paper is solely an introduction to the work in progress Arcticism project and its current state of summarized findings and analysis. It is being published prematurely as a writing sample to meet grad school application deadlines. Inuit Studies books were reviewed manually, and "notability" and "predominance" of candidate traits were subjectively weighed for significance, in the absence of any established standards in historical psychology regarding gathering evidence from textual sources. A limited number of books and papers have been examined, albeit some of the most prominent ones within the entire library of Inuit studies literature. A full systematic review of literature is still underway, as it is quite time and labor intensive.

The project was organically progressed through up until now, and no pre-established analysis plan was crafted or followed.

Polar psychology literature relies on personality measurement instruments that have been updated over the decades such as the big five NEO PI-R models, which are subject to WEIRD problems, and invariance issues. Factor loading issues may be present, as they are not specifically measuring Arcticism and certain facets are contradictory to each other. Big Five studies also haven't been controlled for age, as age is noted to have an general influence on score patterns.

16PF factors sometimes have conflicting measures of Arcticism, for example in Q3 Perfectionism, both sides of the scale would technically be Arcticist, as being flexible to an extent is adaptive and so is being self disciplined and controlled.

This methodology for discovering shared traits amongst a modern population with an epistemically sound ethnographic analogy population, which currently entails relying on mostly qualitative ethnographic literature to derive candidate traits from, is likely suboptimal for testing causation using quantitative measurements in modern ecological personnel studies, as ethnographic evidence supporting the saliency

of a trait doesn't mean it already has mature quantitative instruments suited for precise and isolated measurement of that trait. For example to test Arcticist causation of the qualitatively proposed trait Cautiousness, we deferred to the lower end of 16PF factor F (Liveliness) as a proxy to measure this trait, and such method may be confounded by the weightings or meanings of the various facets that make up the scale. In the absence of specialized instruments for testing Arcticist causation, we currently have no choice but to rely on existing instruments and studies for an introductory exploration into this field. In addition, salient traits in ethnographic literature often overlap in meaning and subdomains, like Emotional control can be considered a subdomain of the trait/value Harmony, which makes the organization of trait categories convoluted and suboptimal for the ease of measurement and classification.

There is some evidence of higher anxiety in East Asians, and in polar personnel, but due to no studies found so far in Inuit it was not included as a candidate trait. There is also evidence of higher self sufficiency in Inuit and polar personnel, but no studies found so far in East Asians. They are both plausibly Arcticist traits, but currently unexplored due to the methodology that uses ethnographic analogy first to propose shared candidate traits. This issue will likely be resolved as the project progresses.

Polar psychology subjects tend to be from European nations, some from recently ancestrally cold environments like Danes and Norwegians. Such persons being somewhat cold adapted may affect their pre- and post expedition personality measurement scores. There is no control or specific data on the ethnicities of subjects, especially in nations like the US where there are sizable African, Hispanic, and other non-European people in their military programs. However despite this concern, most studies still generally show a trend towards arcticist traits for the successfully adapted. A hypothesis that can be tested is if Scandinavian populations show a smaller movement towards Arcticist traits, than temperate or tropical zone populations, who should show a larger movement in the successfully adapted. However, personnel selection programs already choose those with Arcticist leaning traits, making a random sampling difficult to achieve.

Inuit studies often generalize across all arctic natives regardless of whether they are herders, or coastal hunters, or fishermen, or mixed. Their specific hunting style may be a confounder.

Implications

Trait malleability

The trait malleability studies in polar personnel psychology shows how human populations can alter their own Big Five personality trait scores simply by adapting to non-native climates and ecologies with different adaptive challenges. This ecological trait malleability appears formulaic- if a population that is natively adapted to a particular ecology successfully adapts to another indigenous population's local ecology, the former population starts taking on general adaptive personality traits and Big Five scores similar to the new environment's indigenous population. This ecological trait malleability is congruent with cultural trait malleability studies done by McCrae et al. (1998), where second generation Canadian born Chinese students had Big Five scores partially shifted towards the European Canadian norm, as compared to a baseline reference of first generation Chinese students.

Existing evolutionary and cultural psychology models

In terms of generating a statistical composite of a modern population's EEA, the late Pleistocene post-OoA environments were mostly neglected, with a focus only on pre-OoA environments. Evolutionary biology sometimes include post-OoA environments, like ancestral pastoralists and evolved lactose tolerance, high altitude mountain inhabitants and increased lung capacity, or sea nomads and larger spleen sizes. For some reason, this inquiry into post-OoA environments is mostly absent from evolutionary psychology. This gaping hole in our psychological models may be the missing causal factor in explaining psychological variation across the world, considering such environments were isolated and adaptively different enough to alter the very physical morphology of its inhabitants.

Nisbett's (2003) "schematic model of cognitive processes" used in *The Geography of Thought* also has ecology as its primary layer of influence, and it would not disturb the model to include the late Pleistocene arctic environment as a deeper layer that preceded the mainland East Asia ecology layer, in order to speculate on the resulting cognitive processes. There should be minimal discomfort for experienced ecological psychologists to use the TEE model and extend their inquiries into late Pleistocene ecologies.

Intra-national comparisons of agriculture/pastoralism influences on collectivism/individualism has not accounted for cross-national differences in Big Five traits, and has not attempted to control for agriculture to figure out whether agriculturalists of different nations or major world regions score similarly on personality measurements or other notable metrics. East Asia's unique Big Five trait patterns of lowest Openness, lowest Extraversion, highest Neuroticism, (lowest Agreeableness and lowest Conscientiousness affected by modesty bias and omitted) is congruent with Inuit Big Five traits, and Arcticist shifted traits in polar personnel. The agriculture theory of East Asian personality would have a hard time entirely explaining the extreme distributions of their general Big Five traits (Schmitt et al., 2007) compared to other agriculturalist world populations in South America, Middle East, and South Asia. Agriculture/pastoralism is only one factor of many that comprises a total ecological model of psychological differences between population, it is highly unlikely an adequate ecological explanation for the entirety of notably different psychological traits across the many agriculturalist/pastoralist populations of the world, and it's weighting in such international models should be carefully proportioned.

Reexamining previous theories of Eastern psychology

One of the weakness of the current Holocene models of Eastern psychology as depicted in Figure 1, is that within its limited scope of inquiry, many prominent ideologies like Confucianism and Taoism appear as if they spontaneously emerged from major figures or dynasties, and as if the early East Asian populations were blank slates that were molded and modified by these ideologies to become how they are today. However, when taking into account pre-Holocene ancestral Arctic environments and how the ancestral populations of East Asians adapted to them, it is clear that there is direct continuation of these Arcticist traits and worldviews into Holocene societies in East Asia, with its major themes, values, and epistemologies reflected in the core tenets of Confucianism, Taoism, Shintoism, Korean Shamanism, Tengrism, and maybe even Buddhism.

Classical Eastern "Confucian" ideologies and social values like Zhong Yong and Harmony, which Western scholars sometimes misattribute to have spontaneously emerged from Confucius, is commonly noted in Classical Chinese studies as just his rearticulation, theoretical systemization, and revival of the previous dynasties' social values, rituals, laws, and aesthetics (Yuan, 2022; Mou, 2023)- values that likely persisted even further back in their ancestral population as adaptive mechanisms for life in paleolithic Arctic

Eurasia, which steadily continued into these early Xia, Shang, Zhou, dynasties in East Asia. Zhong Yong contains the core Arcticist themes of emotional moderation, social harmony, balance, flexibility, and practicality. What is likely original about Confucius' work is that he refined these ancient values into a systematized doctrine that could be scalable and spreadable amongst domestic and international literati in Korea, Japan, and Vietnam. The influence of Arcticism on the Confucian philosophies concerning larger scaled states, rituals, rites, etc is unclear and not yet explored at the current stage of this project.

The animism, harmony, and holism of Shintoism, Taoism, Korean Shamanism, and Tengrism, are identical to the Inuit's animism "Anirniit", harmony/balance as core tenets of Inuit "Maligait" (Tagalik, 2009), and Inuit holism (Hippler, 1974). According to our ethnographic analogy, these Holocene Eastern religions were likely all complex refinements and localizations of existing paleolithic Arcticist beliefs brought over by earlier migrations into mainland East Asia and Japan from various North Eurasians, Siberian ancestral populations.

Buddha was from a northeastern Indian Shakya tribe, a group noted for its higher paternal East Asian Munda genetic ancestry (Levman, 2014) compared to other Indian groups (Tätte et al., 2019), and although quite speculative, Buddhism appears to have some Arcticist themes of emotional equanimity, harmony and balance, an everchanging and impermanent epistemology, and reincarnation beliefs similar to Inuit and other foragers. There may be a connection of Buddha's higher East Asian ethnic background on his resulting religious beliefs, and it is worth exploring if that contributed to why Buddhism failed to sustain in local Indian regions (Austronesian, Iranian, Eurasian steppe ethnic backgrounds) but spread so widely across East Asian societies, easily syncretizing with local folk religions and becoming a primary religion, even amongst Tibetan and Mongolian pastoralists. Buddhism may be just another backwards compatible, Arcticist influenced belief system that ex-Arctic peoples had a natural affinity for.

Arcticism and the TEE model would also better explain the spread of these Eastern religions and ideologies throughout mostly East Asian populations. No significant unnatural modification of personality was needed for the adoption and spreading of these ideologies, as the population was likely already predisposed to it, feeling these ideas to be backwards compatible with their preexisting affinities.

As depicted and causally linked in Figure 2, Arcticism theory encompasses and can parsimoniously account for all the "separate" emergence and adoption of these various ideologies around East Asia- summing up these major eastern ideologies, general personality traits, worldviews, and values, as a simple continuation and refined articulation of late Pleistocene arctic adaptation. It's not so much a "unified theory" but rather one that recognizes the lack of arbitrary emergence and separation of existing theories in the first place. Its methodology extends past just arctic regions, and can be used for all types of climates.

These themes of animism, holism, harmony, practical knowledge over abstract theory, are forager foundational schemas that plausibly preceded even the paleo-arctic period, as they are also present amongst indigenous populations of many global regions including Africa (Imafidon et al, 2023). However, their intensity or distinct regional style is likely reflective of the local ecology, with extreme Arctic environments forcing certain values like Harmony or Practicality into higher importance. It is highly likely the Western/Eastern comparative thought dichotomy is just another WEIRD blind spot (Henrich et al., 2010), when in reality Eastern thought appears more similar to that of classic indigenous foragers around the world, although likely a more refined and doctrinized version due to their continuous literary tradition, and is only seen as unique in the current state of anthropology where non-WEIRD and non-Eastern cultures are relatively understudied.

Talhelm et al. (2014)'s rice farming theory of collectivism and individualism in China may explain the comparative collectivism/individualism and holism/analyticism within China but it solely tests one factor and does not attempt to explain the entirety of distinctive eastern traits in a complete model like Arcticism theory does. From a temporal perspective, arctic adaptation preceded and lasted just as long or even longer than Holocene agriculture, likely acting as a "default" base of general personality prior to adapting to multicrop/ rice farming which likely exacerbated existing harmony/cohesion tendencies, or pastoralism in Mongolians and Tibetans which likely increased individualism tendencies.The Japanese ecological psychology theory of frequent natural disasters necessitating higher collectivism is likely valid, but temporally secondary to Arcticism. These Holocene factors of local Japanese natural disasters and rice farming likely exacerbated or reinforced already high preexisting Arcticist interdependencies.

The civilizational, cultural, and philosophical centers of the supposedly collectivist and holistic Chinese culture is from the Northern wheat/multicrop farming areas, as Taoism's founder Laozi from Luyi in Henan, and Confucius was from Qufu in Shandong, as was the Xia, most of Shang, and Zhou dynasties, from which Confucius inherited and revived his ideology from. Although wheat/multicrop farming Northern Chinese may be more analytical and individualistic compared to their southern peers, they are still relatively collectivist and holistic compared to Westerners. Arcticist theory can explain the psychological differences between northern China and the rest of the world but the scope of rice farming theory is limited to explaining the difference within China.

Figure 1. ***Existing models of Eastern ecological and cultural psychology***

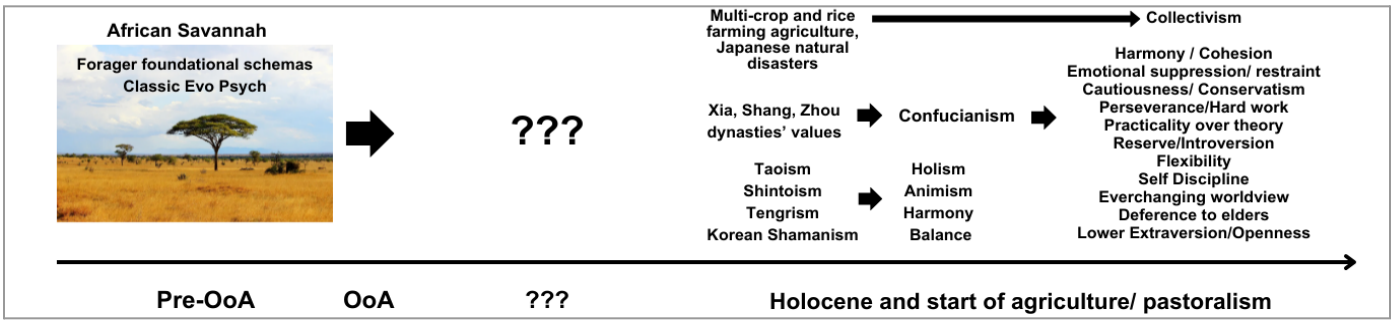
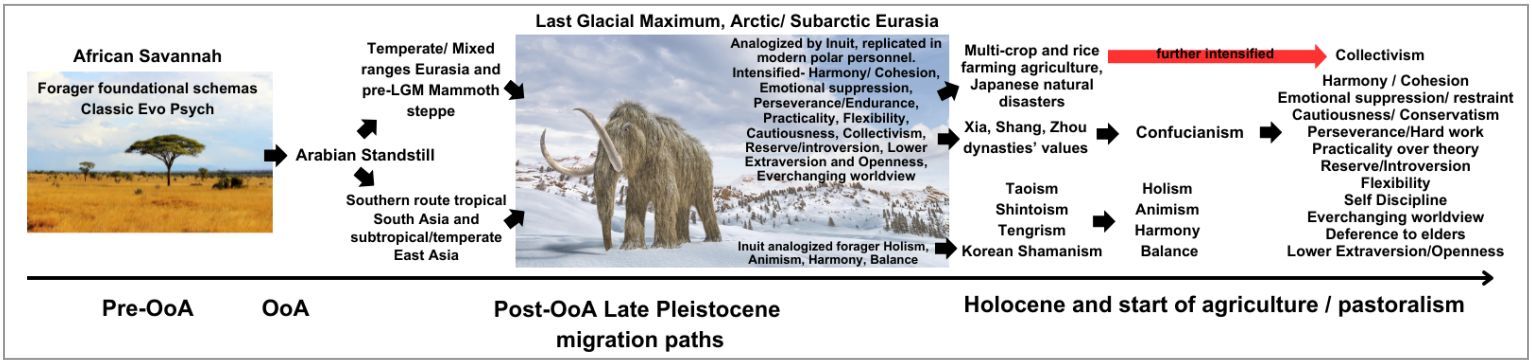


Figure 2. ***The TEE model of Eastern ecological and cultural psychology with Arcticism***[6]



[6] The "Arabian Standstill" period shown after OoA refers to the ~82-55 kya period in which AMH experienced cold arid adaptation and selective pressures in the Arabian peninsula (Tobler et al., 2023).

Ecology-induced epistemologies of East and West

> "Ancient Greek philosophers were powerfully inclined to believe that things don't change much or, if they really are changing, future change will continue in the same direction, and at the same rate, as current change. And the same is true for ordinary modern Westerners. But like ancient Taoists and Confucian philosophers, ordinary modern Asians believe that things are constantly changing; and movement in a particular direction, far from indicating future changes in the same direction, may be a sign that events are about to reverse direction." (Nisbett, 2003)

Cultural epistemology may be a retained epistemological framework of their ancestral environment and differentiations encountered on their evolutionary migratory path. Could classical Western (Greek) epistemology have been influenced by their predominantly neolithic farmers post OoA migratory paths along mostly temperate and hospitable environments in Southern Europe? A migratory path through, or sedentary experience in, mostly similar environments would likely increase a population's sense of environmental stability, unchanging constancy, which may influence their modern epistemology to be more analytic as environmental context would always feel similar and unchanging, thus a predisposition to assuming universal laws and principles, in which specific objects and not the universe are the usual subjects of change, and thus attempts to "define" it with an fixed identity. Beliefs in linear futures, "things don't really change" would be sensibly reflective of the environmental experience during migratory path along unchanging temperate, predictable environments. Belief in high personal agency, internal locus of control- sensible in easier temperate environments. Thus causal attributions to personal character instead of external forces, concept of individual legal responsibility vs collective punishment in the East. This is speculative but so are the incumbent theories on origins of differing epistemologies.

Abstract thinking requires the thinker to abstract their thoughts away from the immediate demands of the environment, a task likely far easier on the stable and temperate Southern European coasts than in the Arctic, where the omnipresent lethal cold and environmental harshness throws any inhabitant into a perpetual immediate survival struggle. This would also explain why the notable pioneers of Western European scientific revolutions tended to be wealthy noblemen, monks living in the solitude and peace of their monasteries, or scholars supported by wealthy patrons- and rarely from impoverished, subsistence survival classes struggling to survive in the physical conditions of the environment.

It's important not to ecologically model western epistemology as arbitrarily starting from the coasts of Greece during the Holocene either, as the TEE model includes all the ecologies encountered on the way, their habitability and stability, and their harshness and diversity. "Western" ecological epistemology should be divided into the differing prehistoric European migration paths, one along the Southern European route out of Arabia into Anatolia and then Greek coasts, where a stable and generally hospitable environment led to precocious civilization and epistemologically stable philosophies of ancient Greece. The other half of "Western" ecological epistemology would be the northern European migratory path out of Arabia into the Western Eurasian steppes, to the Caucus regions north of the Caspian and Black Seas, and eventually northwest into northern and western Europe, whose path was likely harsher and fully seasonal with colder winters than the Southern European ecological migratory path, which may explain Northern and Western Europeans' early lag in civilizational and philosophical development compared to Southern Europe. After the northern path Europeans later adopted the southern path European epistemologies and philosophical bases of thought, it took on a distinctly more vigorous, industrious, and disciplined manner consistent of colder climate harshness and agitation. It is notable how northern path European development and philosophy continued to lag in the Caucus, Baltic, Nordic regions (until very recently) and truly flourished starting in a small Western region with the perfect combination of trade, geopolitical incentives, and Protestantism. This is why the TEE model of a population's ecological history should be

utilized for their psychological, epistemological, philosophical models, to get a complete ecological understanding and prevent the confounders of differing Southern and Northern European ancestral ecologies from affecting inquiries into the ecological origins of "Western" epistemology.

Some similarities with Indian epistemology being partially analytical as well, as northern Indians were from temperate steppes, and southern Indians had a mostly sedentary TEE path in unchanging tropical coasts.

East Asians' double whammy migratory path into a far different environments than pre-OoA environments, and that arctic environment being described as everchanging, deceptive, and dangerously uncertain by modern arctic anthropologists (Briggs, 1991), is highly likely to have influenced the resulting Eastern epistemologies as believing in constant change, no attempts at universal principles, focus on cyclical thinking, cautious "good times might not last" type future thinking, higher belief in external locus of control (external causal attributions instead of personal character?). This environmental causation of the functional necessity of adapting to an epistemology reflective of local ecological conditions was replicated in Westerners as well (Bates, 2007). The way Briggs (1991) describes the Inuit world and worldview as nearly identical to how Nisbett (2003) describes the Eastern worldview and epistemology:

> "I have said that Inuit regard the world as a place where little can be taken for granted, where answers are not fixed and nothing is ever permanently knowable. At the same time, they consider it potentially knowable and usable from moment to moment. One manifestation of this orientation is a tendency to look at both people and objects in terms of multiple and shifting qualities and uses, instead of freezing them with labels into Entities and focusing attention on one or a few fixed attributes or uses to the exclusion of others." (Briggs, 1991)

Methodological

Previous psychological studies with samples that categorize East and South Asians together under the group categorization of "Asian" are likely heavily affected by confounder of differing ancestral environments. Aside from agriculture-induced collectivism, nearly every other notable and stereotypical general personality traits are different and reflective of post-OoA ancestral background, where East Asians had arctic climates, and southern South Asians (Austronesian) had hot tropical climates and northern South Asians (Eurasian) temperate mixed climates. Despite both populations having some level of collectivism due to multicrop and rice farming, they are quite different on other aspects such as higher emotional expressiveness and social assertiveness in South Asians (Lu et al., 2020), and lower emotional expressiveness and social assertiveness in East Asians. Only Arcticism and the TEE model which takes all ancestral climates into account can entirely explain these two salient traits, in addition to the differing physical morphology and skin pigmentation reflective of colder subarctic and hot tropical ancestral environments.

Retained practices

Utilizing the TEE model and our Inuit ethnographic analogy, we can see several cultural practices previously attributed to current Holocene Eastern civilizations, that are likely to have originated earlier and are continued from paleolithic arctic times. Chinese reflexology is likely a retained paleoarctic practice, as analogized by its practice amongst remote Siberian shamans (Timeline, dir. 2019). The heavy use of ridicule and shaming in Eastern education systems is reminiscent of Inuit elders' education of young hunters, which Nelson (1969) noted to be heavy in ridicule and humiliation, an adaptive mechanism to

simulate and reinforce the easily fatal consequences of mistakes in the Arctic. The Japanese tradition of apprenticeship learning through the silent observation of an elder master rather than from instruction "gijutsu wo nusumu" is likely a continuation of paleoarctic learning traditions found to be identical in Inuit (Pauktuutit, 2006, p. 25), and in indigenous foragers all around the world (Lew-Levy et al., 2018). The traditional Chinese use of split pants "kai dang ku" for toilet training young children is likely a retained paleoarctic practice as it is practiced amongst several remote Inuit tribes (Honigmann and Honigmann, 1953, p. 38- 39).

East Asian evolutionary mismatch

Due to the significant difference of the ancestral East Asian arctic environment and the generally temperate and subtropical Holocene environments East Asian populations inhabit today, there is likely a case of psychological evolutionary mismatch to be made. Psychological traits that formed and intensified for adapting to late Pleistocene Arctic climates may prove to be partially maladaptive not just in Holocene temperate and subtropical climates, but in a modern globalized social environment of people who are adapted to the hospitable non-Arctic ranges of climates. Arcticist adaptation is likely the main causal factor for the distinctive cultural and psychological traits, both adaptive and maladaptive, that generally characterize the unique aspects of Eastern civilization.

Regarding Needham's Paradox of China's premodern underdevelopment of theoretical science as compared to Western European science, the Arcticist trait of higher pragmatism/practicality of Eastern epistemology, shown to have likely preceded Confucianism, affecting even non-Confucian Mongolians and observed to form in modern arctic personnel, has long stunted the development of theoretical science in favor of practical innovation. Arcticist subdomain traits of low assertiveness, high modesty, and high cohesion which likely preceded Confucianism, plausibly contributed to main causal factors behind a comparative lack of scientific attribution culture, a culture of intellectual debate, concepts of intellectual property, and author self promotion which prevented the development of a healthy scientific community. Arcticist traits of higher harmony/cohesion likely led to higher desire of initiating imperial unity and a higher tolerance for accepting it, unlike the highly fragmented and mutually competitive feudal states of premodern Europe, which was proposed by Needham (2004) as a influential causal factor in fostering and funding European innovation, exploration, and ideological diversity.

However, the Practicality is also a noted adaptive advantage in the realm of commercial innovations, as East Asian industries are stereotyped to be particularly adept at linear innovation, continuously improving on existing inventions and the efficiency of processes required to make them.

Regarding the relative lag of Eastern Kuhnian revolutionary science and inventions compared to the West, not only are the aforementioned factors relevant, but also the Arcticist trait of higher cautiousness and the Big Five traits of lower Extraversion and lower Openness to Experience, shown in our Inuit analogy, replicated and observed to form in modern polar personnel. Shi et al. (2016) found Openness to Experience to be the moderating influence between intelligence and creativity, finding high Openness to enhance creative thinking in urban children of all intelligence levels. Kura et al. (2015) also observed that Northeast Asians' lag in Nobel and Field medals are possibly due to genetic causes of lower inquisitiveness (a proxy for Openness and Extraversion), lower individualism and higher anxiety over social exclusion which discourages challenging established authorities and consensus, all heavily Arcticist traits. This low Openness is likely reinforced by a Arcticist traditional education system that mostly discourages open questioning of elders, with the use of ridicule and shame to punish mistakes similar to that of Inuit hunting education (Nelson, 1969).

The higher Arcticist tendency of introversion and reserve, further exacerbated by modern individualism's clash with traditional collectivism in Japan, is plausibly a main causal factor in Japan's Hikikomori phenomenon where individuals hermit themselves away in a room for years on end.

The Arcticist tendency of higher perseverance/endurance/hardworking-ness seems generally adaptive for most environments, as the fast modern development of Eastern states can be attributed to it as a main causal factor. However, when taken to an extreme, it can reach maladaptive levels and contribute to the brutally grinding work culture in East Asia, with every major Eastern state having a widely used term for "death by overwork."

The Arcticist trait of Emotional control/suppression/stability, may be maladaptive in Western societies where emotional expressiveness is a social norm. The Western entertainment industry has traditionally regarded East Asian talent as too unexpressive and stoic to play lead roles in Western films and shows, negatively impacting many of their careers. Harvard University's admission departments allegedly discriminate against Asian American applicants, rating them as a group with lower "positive personality traits" noted as courage, likeability, and kindness (Hartocollis, 2018), which may have been partially due to differing emotional expressiveness norms impacted by the Arcticist trait of emotional suppression and introversion.

A higher Arcticist self and social consciousness subdomain trait of empathic forbearance is salient amongst East Asians (Wei et al., 2013), and seems generally maladaptive in both Eastern and Western societies, as it can lead to higher personal stress, lack of support, and mental health issues related to emotional suppression and isolation.

The Arcticist subdomain trait of Harmony, unassertiveness, widely noted in Inuit and replicated in polar personnel, seems socially maladaptive in Western social environments, as it was shown to be the main causal factor for East Asian underrepresentation in American leadership positions as compared to South Asians (Lu et al., 2020). It's other related subdomains, deference, acquiescence, and high modesty, seems maladaptive in the West as well, with stereotypical reports of East Asians being commonly taken advantage of by other assertive peoples, accurately satirized in the comedic film *Harold and Kumar Goes to White Castle* where Korean Harold is too polite and deferential to refuse his assertive coworkers forcing him to do their work, and after going through an archetypal hero's journey, he breaks free of Arcticism and asserts himself.

Non-human primates

Arcticism theory may even be generalizable to non-human primates, as a primate genomics study by Qi et al. (2023) showed that ancestral glacial events experienced by Asian Colobine monkeys selected for higher efficiency oxytocin and dopamine neurobiological pathways, resulting in larger scale social cohesion, higher male to male tolerance, and longer maternal care and lactation. Replication of such studies in other types of primates may provide taxonomic level supporting evidence for Arcticism theory.

On Arctic adjacent people

Relatively recent (~4kya to ~2.8kya) Eurasian neolithic farmers and pastoralists who migrated to milder subarctic regions like Scandinavians, Nordics, Baltics, are also stereotyped with many Arcticist traits like introversion, reserve, shyness, resilience/endurance, stoicism, unexpressiveness, and

cohesion/collectivism, though to a lesser intensity than Northeast Asians. It is likely as a result of facing similar adaptive challenges of cold adaptation as generalized by Arcticism theory across East Asians, Inuit, and modern polar personnel. The American social phenomena of "Seattle Freeze" and "Minnesota Nice", attributed to the higher Scandinavian ancestry of those regions, are likely due to Arcticist adaptation.

East Asian population history

Arcticism theory provides supporting psychological evidence for north-south dual route models of East Asian population history as proposed by the Pincer model of Cavalli-Sforza, and the Overlapping model of Di and Sanchez-Mara (2011).

Conclusion

The proposed TEE model and methodology can resolve a major blind spot in the current overreliance on Holocene only models of cultural psychology. The proposed methodology of using population history genetic data to determine what paleoclimatic region a modern population inhabited in their TEE history, then using an epistemically sound local ethnographic analogy to propose candidate traits of ecological psychological adaptation, and modern personnel studies to test for causation, generalizability, and predictiveness, can help many ecological psychology theories advance past the "just so story" stage regarding causation, and spawn entirely new theories and deeper understandings of populations that inhabited different environments before their current Holocene environment.

The longstanding social and cultural problems bottlenecking the flourishing of Eastern civilization are highly likely to be maladaptive aspects of the Arcticist evolutionary mismatch, and not caused by Confucianism, which was a rearticulated and doctrinized version of the preceding dynasties' social values, which were highly likely to be direct continuations of paleolithic Arcticism. It is worth exploring if ancestral ecological adaptation or modern mismatches also negatively affect other societies around the world, as this may be the missing causal factor behind underdevelopment in many populations.

As shown in the trait malleability studies in polar personnel psychology, and in acculturation studies of second generation immigrants, Big Five personality traits of which specific patterns are highly correlated with success, performance, and human flourishing (Mammadov, 2022; Olaru et al., 2023; Wilmot and Ones, 2022), are plastic under certain environmental conditions and not necessarily "fixed". Evolution and adaptation is an ongoing process, and for East Asians or any other populations plausibly stunted by ancestral climatic factors, to unlock fully self-actualized levels of personal and collective flourishing, some readaptation may be necessary.

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